



a member of **The GEL Group INC**



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March 20, 2018

Mr. Scot Fitzgerald  
CH2MHill Plateau Remediation Company  
MSIN R3-50 CHPRC  
PO Box 1600  
Richland, Washington 99352

Re: CHPRC SAF W18-012  
Work Order: 439941  
SDG: GEL439941

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 13, 2017. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Per PD18-0155, this package was revised to correct the client sample ID for 439941007.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Heather Shaffer  
Project Manager

Purchase Order: 300071 - 7H  
Chain of Custody: W18-012-049, W18-012-052, W18-012-053, W18-012-206, W18-012-212 and W18-012-213

Enclosures



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# **Problem and Discrepancy Report**

<b>PROBLEM AND DISCREPANCY (P&amp;D) REPORT</b>		<b>P&amp;D Number:</b> PD18-0155 <b>Rev. Number:</b> 0 <b>Laboratory:</b> GEL <b>SDG Number:</b> GEL439941 <b>Date Initiated:</b> 03/15/2018
<b><u>SAMPLE EVENT INFORMATION</u></b>		
SAF NUM(S):	W18-012	
<b><u>SAMPLING INFORMATION</u></b>		
NUMBER OF SAMPLES:	1	
SAMPLE MATRIX:	WATER	
<b><u>ISSUE BACKGROUND</u></b>		
CLASS:	Narrative Issues	
TYPE:	Incorrect sample numbers	
DESCRIPTION:	Through out the data report sample B3FN13 has been identified as B33FN13. This issue only effects the hard copy.	
<b><u>RESOLUTION</u></b>		
PROPOSED RESOLUTION:	Please correct the issue and resubmit the hard copy data package	
<b><u>FINAL RESOLUTION:</u></b>		
<b><u>SUBMITTED BY:</u></b>		
FITZGERALD, SL	03/15/2018	

# Case Narrative

Per PD18-0155, this package was revised to correct the client sample ID for 439941007.

**General Narrative  
for  
CH2MHill Plateau Remediation Company  
CHPRC SAF W18-012  
SDG: GEL439941**

**March 20, 2018**

**Laboratory Identification:**

GEL Laboratories LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt**

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on December 13, 2017, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

**Items of Note** All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative.

**Sample Identification**

The laboratory received the following samples:

<b>Laboratory Identification</b>	<b>Sample Description</b>
439941001	B3FKC1
439941002	B3FKB8
439941003	B3FJW6
439941004	B3FJX1
439941005	B3FMC0
439941006	B3FN12
439941007	B3FN13

**Case Narrative**

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**Data Package**

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: GC Semivolatile Herbicide, GC Semivolatile PCB, GC Semivolatile Pesticide, GC/MS Semivolatile, GC/MS Volatile, General Chemistry and Metals.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.



Heather Shaffer  
Project Manager

**Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL439941  
Work Order #: 439941**

## **GC/MS Volatile**

### **Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

#### **Calibration Information**

##### **Continuing Calibration Verification Requirements**

The calibration verification standard requirements were not all met for samples 439941002 (B3FKB8), 439941003 (B3FJW6) and 439941004 (B3FJX1). Trichlorofluoromethane recovered at 21.0%D/drift and Acetone recovered at 28.8%D/drift in the daily CCV analyzed on 12/16/17. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported. The calibration verification standard requirements were not all met for samples 1203940432 (Non SDG 439439001PS) and 1203940433 (Non SDG 439439001PSD). Acetone recovered at 28.8%D/drift in the daily CCV analyzed on 12/16/17. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

#### **Quality Control (QC) Information**

##### **Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

<b>Sample</b>	<b>Analyte</b>	<b>Value</b>
1203940432 (Non SDG 439439001PS)	1, 4-Dichlorobenzene	67* (70%-130%)
	2-Butanone, 2-Hexanone	54* (70%-130%)
	4-Methyl-2-pentanone	68* (70%-130%)
	Acetone	45* (70%-130%)
1203940433 (Non SDG 439439001PSD)	1, 4-Dichlorobenzene	63* (70%-130%)
	2-Butanone	54* (70%-130%)
	2-Hexanone	59* (70%-130%)
	Acetone	44* (70%-130%)
	Xylenes (total)	69* (70%-130%)

## **GC/MS Semivolatile**

**Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Quality Control (QC) Information****Laboratory Control Sample Duplicate (LCSD)**

An LCSD was analyzed along with an MS/MSD pair in this batch.

**Laboratory Control Sample (LCS) Recovery**

The LCS and/or LCSD (See Below) spike recoveries were not within the acceptance limits. The client established the limits of 70%-130%. Failures are expected. The data were reported per client request.

Sample	Analyte	Value
1203937915 (LCS)	Several	See applicable report
1203937918 (LCSD)	Several	See applicable report

**Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information****CCV Requirements**

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for sample 439941002 (B3FKB8) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

**Quality Control (QC) Information****Laboratory Control Sample (LCS) Recovery**

The LCS and/or LCSD (See Below) spike recoveries were not within the acceptance limits. The client established the limits of 70%-130%. Failures are expected. The data were reported per client request.

Sample	Analyte	Value
1203940035 (LCS)	Several	See applicable report

## **GC Semivolatile Pesticide**

### **Organochlorine Pesticides and Chlorinated Hydrocarbons**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

#### **Calibration Information**

##### **Continuing Calibration Verification (CCV) Requirements**

Calibration verification standards (ICV or CCV) requirements have not been met for samples 439941005 (B3FMC0), 439941006 (B3FN12) and 439941007 (B3FN13) in this batch in this SDG. One or more target analytes failed acceptance criteria with a negative bias on one analytical column in the standards bracketing the samples in this SDG. These target analytes were not detected above the PQL on either of the columns in the associated environmental samples; therefore, the non-compliance had no adverse effect on the data.

#### **Quality Control (QC) Information**

##### **Laboratory Control Sample (LCS/LCSD) Recovery**

The LCS and/or LCSD (See Below) did not meet the spike recovery acceptance limits on one analytical column while met the recovery acceptance criteria on the other column. As target analytes were not detected on either of the columns in the associated environmental sample, the results were reported.

Sample	Analyte	Value
1203938430 (LCS)	4, 4'-DDE	67* (70%-130%)
	Endrin aldehyde	66* (70%-130%)

##### **Matrix Spike (MS/MSD) Recovery Statement**

Matrix QC sample (See Below) did not meet spike recovery acceptance criteria. All other QC samples in this batch met spike recovery criteria. The poor recovery appears to have been isolated to this single matrix QC sample.

Sample	Analyte	Value
1203938434 (B3FMC0MSD)	Endrin	4* (15%-151%)
	gamma-BHC (Lindane)	34* (35%-131%)

##### **MS/MSD Relative Percent Difference (RPD) Statement**

The RPD values between the MS and MSD, (See Below), were not within the acceptance limits due to the large difference between the individual recoveries in each MS and MSD analyte pair.

Sample	Analyte	Value
1203938433MS and 1203938434MSD (B3FMC0)	Several	See applicable report

#### **Technical Information**

##### **Florisil**

Florisil clean-up was not performed on client and quality control samples in this batch.

#### **Miscellaneous Information**

##### **Manual Integrations**

Samples 1203938430 (LCS), 1203938434 (B3FMC0MSD), 439941005 (B3FMC0) and 439941007 (B3FN13) required manual integration to correctly position the baseline as set in the calibration standard injections.

##### **Additional Comments**

The Toxaphene and/or Chlordane standards were analyzed for this SDG as a retention time marker and pattern reference. A five-point calibration curve and calibration verification standard forms were not submitted in the data package since Toxaphene and/or Chlordane were not detected in the client samples.

## **GC Semivolatile PCB**

#### **Analysis of The Analysis of Polychlorinated Biphenyls by GC/ECD by ECD**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

#### **Quality Control (QC) Information**

##### **Laboratory Control Sample (LCS/LCSD) Recovery**

The LCS spike recovery was slightly below the acceptance limits for Aroclor-1260 on one analytical column while within the acceptance limits on the other column. This non-compliance had no adverse effects on the data as samples 439941005 (B3FMC0), 439941006 (B3FN12) and 439941007 (B3FN13) were not detected with any of the Aroclors on either of the columns.

Sample	Analyte	Value
1203945811 (LCS)	Aroclor-1260	68* (70%-130%)

#### **Technical Information**

##### **Preparation/Analytical Method Verification**

All samples and QC in this batch were cleaned using alumina in order to remove oil and other high molecular weight interferences.

#### **Miscellaneous Information**

##### **Manual integrations**

Samples 1203945810 (MB), 1203945812 (B3FN13MS), 439941005 (B3FMC0) and 439941006 (B3FN12) required manual integration to correctly position the baseline as set in the calibration standard injections and to properly identify one or more peaks.

## **GC Semivolatile Herbicide**

## **Analysis of Chlorophenoxy Acid Herbicides by ECD**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

### **Calibration Information**

#### **Continuing Calibration Verification (CCV) Requirements**

The calibration verification standards (CCV) did not meet acceptance criteria. One or more target analytes failed acceptance criteria with a positive bias on one or both analytical columns in the standards bracketing samples and associated QC. The positive bias for the analytical data is a result of instrument response increasing after the initial calibration. As there were no target analytes detected in the associated samples, the data were reported. All analytes were within the established retention time windows for this method.

### **Quality Control (QC) Information**

#### **Surrogate Recoveries**

Sample (See Below) did not meet surrogate recovery acceptance criteria. Since there were no target analytes detected in the associated sample above the reporting limits, the biased high surrogate recovery had no adverse impact on the reported data.

Sample	Analyte	Value
1203939188 (LCS)	2, 4-Dichlorophenylacetic acid	145* (42%-136%)

#### **Laboratory Control Sample (LCS) Recovery**

The LCS(See Below) did not meet the CPRC spike recovery acceptance criteria for Dinoseb. Dinoseb was well within GEL SPC acceptance limits. Dinoseb was also well within the spike recovery acceptance limits in the MS and MSD. The data were reported.

Sample	Analyte	Value
1203939188 (LCS)	Dinoseb	60* (70%-130%)

#### **MS/MSD Relative Percent Difference (RPD) Statement**

The RPD between the MS and MSD (See Below) did not meet acceptance criteria. As the spike recoveries were within the acceptance limits, the RPD failure did not adversely impact the data results.

Sample	Analyte	Value
1203939189MS and 1203939190MSD (B3FN12)	2, 4-DB	RPD 29* (0%-20%)
	Dinoseb	RPD 21* (0%-20%)

### **Miscellaneous Information**

#### **Manual Integrations**

Samples 1203939189 (B3FN12MS) and 1203939190 (B3FN12MSD) required manual integration to correctly position the baseline as set in the calibration standard injections.

## **Metals**

### **Determination of Metals by ICP**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

#### **Calibration Information**

##### **CRDL/PQL Requirements**

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 439941001 (B3FKC1) and 439941002 (B3FKB8).

### **Determination of Metals by ICP-MS**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

### **Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

## **General Chemistry**

### **Cyanide, Total**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

### **Sulfide, Total**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Sulfide, Total**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Alkalinity**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

# **Chain of Custody and Supporting Documentation**

CH2MHill Plateau Remediation Company		65 185° CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST L8094		C.O.C.# W18-012-049				
Collector:	Juan Aguilera ICHPRC	Contact/Requester:	Karen Waters-Husted	Telephone No.:	509-376-4650			
SAF No.:	W18-012	Sampling Origin:	Hanford Site	Purchase Order/Charge Code:	3000071			
Project Title:	RCRA, DECEMBER 2017	Logbook No.:	HNF-N-506 - 97132	Ice Chest No.:	GW5-737			
Shipped To (Lab):	GEL Laboratories, LLC	Method of Shipment:	Commercial Carrier	Bill of Lading/Air Bill No.:	1709168135511			
Protocol	RCRA	Priority:	15 Days	Offsite Property No.:	8845			
POSSIBLE SAMPLE HAZARDS/REMARK			SPECIAL INSTRUCTIONS					
* * * Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1			N/A					
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FKC1	Y	W	12-11-17	1205	1x500-mL G/P	7470_MERCURY CV: COMMON (AQUEOUS) ; 6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	28 Days	HNO3 to pH <2
B3FKB8	N	W			1x250-mL G/P	2320ALKALINITY: COMMON	14 Days	Cool <=6C
B3FKB8	N	W			1x1-L G/P	4500D_SULFIDE: COMMON	7 Days	ZnAc+NaOH to pH > 9 / Cool <=6C
B3FKB8	N	W			1x500-mL G/P	7470_MERCURY CV: COMMON (AQUEOUS) ; 6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	28 Days	HNO3 to pH <2
B3FKB8	N	W			5x40-mL aGS*	8260_VOA_GCMS_IIX: COMMON REV 1	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FKB8	N	W	✓		4x1-L aG	8270_SVOA_GCMS_IIX: COMMON REV 1	7/40 Days	Cool <=6C
B3FKB8	N	W	12-11-17	1205	1x250-mL aG	9012_CYANIDE (TOTAL) : COMMON	14 Days	NaOH to pH >=12 / Cool <=6C
Relinquished By: Juan Aguilera ICHPRC	Print First and Last Name Signature	DEC 11 2017	1400	Received By: SSU-1 Date/Time	DEC 11 2017 Signature	1400 Date/Time	Matrix *	
Relinquished By: SSU-1 Print First and Last Name Signature	Print First and Last Name Signature	DEC 12 2017 Signature	1500 Date/Time	Received By: Troy Bacon CHPRC Print First and Last Name Signature	DEC 12 2017 Signature	1500 Date/Time	S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Troy Bacon CHPRC	Print First and Last Name Signature	DEC 12 2017 Signature	1400 Date/Time	Received By: FEDEX Print First and Last Name Signature	Print First and Last Name Signature	1400 Date/Time		
Relinquished By: FedEx Print First and Last Name Signature	Print First and Last Name Signature	Received By: STACY BOWE Print First and Last Name Signature	12-13-17 Date/Time	Disposed By: STACY BOWE Print First and Last Name Signature	Disposed By: STACY BOWE Print First and Last Name Signature	12-13-17 Date/Time	Date/Time:	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):				Disposed By:		Date/Time:	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST W18-012-052									
Collector:	Juan Aguilar <i>ESPRC</i>	Contact/Requester:	Karen Waters-Husted		Telephone No.:		509-376-4650				
SAF No.:	W18-012	Sampling Origin:	Hanford Site		Purchase Order/Charge Code:		300071				
Project Title:	RCRA, DECEMBER 2017	Logbook No.:	HNF-N-506-97133		Ice Chest No.:		<i>005-345</i>				
Shipped To (Lab):	GEL Laboratories, LLC	Method of Shipment	Commercial carrier		Bill of Lading/Air Bill No.:		<i>170907242310</i>				
Protocol	RCRA	Priority:	15 Days	PRORITY	Offsite Property No.:		<i>0052</i>				
POSSIBLE HAZARDS/REMARK						SPECIAL INSTRUCTIONS					
** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1						N/A					
Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis		Holding Time		Preservative		
B3FJW6	N	W	12-12-17	0934	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days		Cool 1 <=6C		
B3FJW6	N	W			1x1-L G/P	4500D_SULFIDE: COMMON	7 Days		ZnAc+NaOH to pH > 9 / cool <=6C		
B3FJW6	N	W			5x40-mL aGS*	8260_VOA_GCMS_IX: COMMON REV 1	14 Days		HCl or H2SO4 to pH <2 / Cool 1 <=6C		
B3FJW6	N	W			4x1-L aG	8270_SVOA_GCMS_IX: COMMON REV 1	7/40 Days		Cool 1 <=6C		
B3FJW6	N	W	12-12-17	0934	1x250-mL aG	9012_CYANIDE (TOTAL) : COMMON	14 Days		NaOH to pH >=12 / Cool <=6C		

Relinquished By: <i>Juan Aguilar ESPRC</i>	Print First and Last Name <i>Juan Aguilar</i>	Date/Time <i>DEC 12 2017</i>	Received By: <i>Jeff Tucker</i>	Print First and Last Name <i>Jeff Tucker</i>	Date/Time <i>DEC 12 2017</i>	<i>0052</i>	Matrix *
Relinquished By: <i>Juan Aguilar ESPRC</i>	Print First and Last Name <i>Juan Aguilar</i>	Date/Time <i>DEC 12 2017</i>	Received By: <i>FEDEX</i>	Print First and Last Name <i>FEDEX</i>	Date/Time <i>DEC 12 2017</i>	<i>0052</i>	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By: <i>Juan Aguilar ESPRC</i>	Print First and Last Name <i>Juan Aguilar</i>	Date/Time <i>DEC 12 2017</i>	Received By: <i>FEDEX</i>	Print First and Last Name <i>FEDEX</i>	Date/Time <i>DEC 12 2017</i>	<i>0052</i>	DS = Drum Solids DL = Drum Liquid T = Tissue L = Liquid V = Vegetation X = Other
Relinquished By: <i>Juan Aguilar ESPRC</i>	Print First and Last Name <i>Juan Aguilar</i>	Date/Time <i>DEC 12 2017</i>	Received By: <i>FEDEX</i>	Print First and Last Name <i>FEDEX</i>	Date/Time <i>DEC 12 2017</i>	<i>0052</i>	
Final Sample Disposition	Disposal Method (e.g., Return to customer, per lab procedure, used in process):				Disposed By:		Date/Time:

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 43944							
Collector:	Juan Aguilar fCHPRC	Contact/Requester:	Karen Waters-Husted						
SAF No.:	W18-012	Sampling Origin:	Hanford Site						
Project Title:	RCRA, DECEMBER 2017	Logbook No.:	HNF-N-506 - 47133						
Shipped To (Lab):	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier						
Protocol	RCRA	Priority:	15 Days	PRIORITY	Offsite Property No.:	80552			
POSSIBLE SAMPLE HAZARDS/REMARK				SPECIAL INSTRUCTIONS N/A					
<p>*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1</p>									
Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis		Holding Time	Preservative	
B3FJX1	N	W	12-12-17	0848	1x250-mL G/P	2320_ALKALINITY: COMMON		14 Days	Cool <=6C
B3FJX1	N	W			1x1-L G/P	4500D_SULFIDE: COMMON		7 Days	ZnAc+NaOH to pH > 9 / Cool <=6C
B3FJX1	N	W			5x40-mL aGs*	8260_VOA_GCMS_IX: COMMON REV 1		14 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FJX1	N	W			4x1-L aG	8270_SVOA_GCMS_IX: COMMON REV 1		7/40 Days	Cool <=6C
B3FJX1	N	W	12-12-17	0848	1x250-mL aG	9012_CYANIDE (TOTAL) : COMMON		14 Days	NaOH to pH >=12 / Cool <=6C

Relinquished By: <i>John Aguilar</i> Print First and Last Name fCHPRC	Signature	DEC 12 2017	10 34	Received By: <i>Vincent</i> Print First and Last Name fCHPRC	Signature	DEC 12 2017	10 34	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid SL = Sludge WI = Tissue L = Liquid W = Water O = Oil A = Air V = Vegetation X = Other
Relinquished By: <i>John Aguilar</i> Print First and Last Name fCHPRC	Signature	DEC 12 2017	1400	Received By: <i>FEDEX</i>	Signature			
Relinquished By: <i>Red Sox</i> Print First and Last Name Signature	Date/Time	Received By: <i>Red Sox</i>	Date/Time	Print First and Last Name Signature	Date/Time	12-13-17	9:20	
Relinquished By: <i>Red Sox</i> Print First and Last Name Signature	Date/Time	Received By: <i>Red Sox</i>	Date/Time	Print First and Last Name Signature	Date/Time			
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):					Disposed By:		

CH2MHill Plateau Remediation Company	46 185 CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 439241
Collector: Juan Amilcar ICP-PRC	Contact/Requester: Karen Waters-Husted
SAF No.: W18-012	Sampling Origin: Hanford Site
Project Title: RCRA, DECEMBER 2017	Logbook No.: HNF-N-506 - 97/32
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial carrier
Protocol RCRA	Priority: 15 Days PRICORITY Offsite Property No.: 8845

**POSSIBLE SAMPLE HAZARDS/REMARK**

\*\* \*\* Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FMC0	N	W	12-11-17	1205	4x1-L AG 8081_PEST GC: CH 01; 8081_PEST GC: COMMON	7/40 Days	Cool <=6C
B3FMC0	N	W	12-11-17	1205	4x1-L AG 8082_PCB GC: COMMON	None	Cool <=6C
B3FMC0	N	W	12-11-17	1205	4x1-L AG 8151_HERBICIDE GC: COMMON	7/40 Days	Cool <=6C

Relinquished By: Juan Amilcar ICP-PRC Print First and Last Name Signature	Received By: SSU-1 Print First and Last Name Signature	DEC 11 2017 Date/Time	46 185 Signature	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By:Troy Bacon CHPRC Print First and Last Name Signature	Received By: Troy Bacon CHPRC Print First and Last Name Signature	DEC 12 2017 0650 Date/Time	46 185 Signature	
Relinquished By:Troy Bacon CHPRC Print First and Last Name Signature	Received By: FEDEX Print First and Last Name Signature	DEC 12 2017 14:00 Date/Time	46 185 Signature	
Relinquished By: Print First and Last Name Signature	Received By: STACY BOONE Print First and Last Name Signature	12-13-17 9:20 Date/Time	46 185 Signature	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:	

CH2MHill Plateau Remediation Company		C.O.C.# W18-012-212						
		Page 1 of 1						
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST <u>A39944\</u>								
Collector:	Juan Aguilar ICHPRC	Contact/Requester:	Karen Waters-Husted Telephone No.: 509-376-4650					
SAF No.:	W18-012	Sampling Origin:	Hanford Site Purchase Order/Charge Code: 3000071					
Project Title:	RCRA, DECEMBER 2017	Logbook No.:	HNF-N-506 -47133 Ice Chest No.: <u>605-738</u>					
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier Bill of Lading/Air Bill No.: <u>77097798810</u>					
Protocol	RCRA	Priority:	15 Days <b>PRIORITY</b> Offsite Property No.: <u>8849</u>					
POSSIBLE SAMPLE HAZARDS/REMARK		SPECIAL INSTRUCTIONS N/A						
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1								
Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis		Holding Time	Preservative
B3FN12	N	W	12-12-17	0936	4x1-L aG	8081_PEST_GC: CH 01; 8081_PEST_GC: COMMON	7/40 Days	Cool <=6C
B3FN12	N	W	12-12-17	0936	4x1-L aG	8082_PCB_GC: COMMON	None	Cool <=6C
B3FN12	N	W	12-12-17	0936	4x1-L aG	8151_HERBICIDE_GC: COMMON	7/40 Days	Cool <=6C

Relinquished By: <u>Juan Aguilar ICHPRC</u>	Print First and Last Name <u>Juan Aguilar</u>	Signature <u>Juan Aguilar</u>	Date/Time <u>1034</u>	Received By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	Matrix * S = Soil
Relinquished By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>1034</u>	Received By: <u>FEDEX</u>	Print First and Last Name <u>FEDEX</u>	Signature <u>FEDEX</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	DS = Drum Solids
Relinquished By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>1034</u>	Received By: <u>FEDEX</u>	Print First and Last Name <u>FEDEX</u>	Signature <u>FEDEX</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	SE = Sediment
Relinquished By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>1034</u>	Received By: <u>FEDEX</u>	Print First and Last Name <u>FEDEX</u>	Signature <u>FEDEX</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	SO = Solid
Relinquished By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>1034</u>	Received By: <u>FEDEX</u>	Print First and Last Name <u>FEDEX</u>	Signature <u>FEDEX</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	SL = Sludge
Relinquished By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>1034</u>	Received By: <u>FEDEX</u>	Print First and Last Name <u>FEDEX</u>	Signature <u>FEDEX</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	W = Water
Relinquished By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>1034</u>	Received By: <u>FEDEX</u>	Print First and Last Name <u>FEDEX</u>	Signature <u>FEDEX</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	O = Oil
Relinquished By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>1034</u>	Received By: <u>FEDEX</u>	Print First and Last Name <u>FEDEX</u>	Signature <u>FEDEX</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	A = Air
Relinquished By: <u>John Jackson</u>	Print First and Last Name <u>John Jackson</u>	Signature <u>John Jackson</u>	Date/Time <u>1034</u>	Received By: <u>FEDEX</u>	Print First and Last Name <u>FEDEX</u>	Signature <u>FEDEX</u>	Date/Time <u>DEC 12 2017</u>	<b>1036</b>	X = Other
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process);				Disposed By:		Date/Time:		

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 439041					
Collector:	Juan Aguilar CH2MHILL PLATEAU REMEDIATION COMPANY	Contact/Requester:	Karen Waters-Husted Telephone No.: 509-376-4650				
SAF No.:	W18-012	Sampling Origin:	Hanford Site Purchase Order/Charge Code: 3000071				
Project Title:	RCRA, DECEMBER 2017	Logbook No.:	HNF-N-506-47133 Ice Chest No.: Gads - 679				
Shipped To (Lab):	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier Bill of Lading/Air Bill No.: N700971988184				
Protocol	RCRA	Priority:	15 Days Offsite Property No.: 88419				
POSSIBLE HAZARDS/REMARK		SPECIAL INSTRUCTIONS N/A					
** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1							
Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FN13	N	W	12-12-17	0848	4x1-L AG 8081_FEST GC: CH 01; 8081_FEST GC: COMMON	7/40 Days	Cool <=6C
B3FN13	N	W	12-12-17	0848	4x1-L AG 8082_FCB GC: COMMON	None	Cool <=6C
B3FN13	N	W	12-12-17	0848	4x1-L AG 8151_HERBICIDE GC: COMMON	7/40 Days	Cool <=6C

Relinquished By: <i>Juan Aguilar</i> Print First and Last Name CH2MHILL PLATEAU REMEDIATION COMPANY	Received By: <i>Tracy</i> Print First and Last Name CH2MHILL PLATEAU REMEDIATION COMPANY	Date/Time 1036 Signature DEC 12 2017	Date/Time 1036 Signature DEC 12 2017	Matrix *
Relinquished By: <i>Tracy</i> Print First and Last Name CH2MHILL PLATEAU REMEDIATION COMPANY	Received By: <i>FEDEX</i> Print First and Last Name CH2MHILL PLATEAU REMEDIATION COMPANY	Date/Time 1400 Signature DEC 12 2017	Date/Time Signature FEDEX	S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: <i>Tracy</i> Print First and Last Name CH2MHILL PLATEAU REMEDIATION COMPANY	Received By: <i>Tracy</i> Print First and Last Name CH2MHILL PLATEAU REMEDIATION COMPANY	Date/Time Signature 12-13-17 9:20	Date/Time Signature Tracy	
Relinquished By: <i>Tracy</i> Print First and Last Name CH2MHILL PLATEAU REMEDIATION COMPANY	Received By: <i>Tracy</i> Print First and Last Name CH2MHILL PLATEAU REMEDIATION COMPANY	Date/Time Signature 12-13-17 9:20	Date/Time Signature Tracy	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):			Disposed By: Date/Time:



Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: <b>CPRC</b>	SDG/AR/CO/COC/Work Order:			
Received By: <i>Stacy Boone</i>	Date Received: <b>13-DEC-17</b>			
Carrier and Tracking Number		<input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <b>7709 7198 8484-1c</b> <b>7709 6813 5541-1c</b> <b>7709 7234 2390-1c</b> <b>7709 6813 5736-1c</b> <b>7709 7198 8110-1c</b>		
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/> Hazard Class Shipped:      UN#: _____			
COC/Samples marked or classified as radioactive?	<input checked="" type="checkbox"/> Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <b>0</b> CPM / mR/Hr Classified as: <b>Rad 1</b> Rad 2 Rad 3			
Is package, COC, and/or Samples marked HAZ?	<input checked="" type="checkbox"/> If yes, select Hazards below, and contact the GEL Safety Group. PCB's    Flammable    Foreign Soil    RCRA    Asbestos    Beryllium    Other:			
Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice    Ice Packs    Dry Ice    None    Other: *all temperatures are recorded in Celsius      TEMP: _____
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <b>IR3-17</b> Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lotti:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Sample ID's and containers affected:
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Comments (Use Continuation Form if needed):           				

PM (or PMA) review: Initials MCH Date 3/14/17 Page 1 of 1

GL-CHL-SR-001 Rev 5

# **Data Review Qualifier Definitions**

**GEL LABORATORIES LLC**  
2040 Savage Road Charleston, SC 29407 (843) 556-8171

Report Date: 02-JAN-18

**Project Specific Qualifier Definitions for GEL Client Code: CPRC**

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The analyte was detected in the associated method blank $\geq$ MDC or >5% sample activity.	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is $\geq$ EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is $\geq$ EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy—Uncertain identification	Radiological	

# Laboratory Certifications

**List of current GEL Certifications as of 20 March 2018**

<b>State</b>	<b>Certification</b>
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122017-25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# Volatile Analysis

# Case Narrative

**GC/MS Volatile  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL439941  
Work Order #: 439941**

**Product:** Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

**Analytical Method:** SW846 8260C

**Analytical Procedure:** GL-OA-E-038 REV# 26

**Analytical Batch:** 1726989

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941002	B3FKB8
439941003	B3FJW6
439941004	B3FJX1
1203940430	Method Blank (MB)
1203940431	Laboratory Control Sample (LCS)
1203940432	439439001(NonSDG) Post Spike (PS)
1203940433	439439001(NonSDG) Post Spike Duplicate (PSD)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information**

**Continuing Calibration Verification Requirements**

The calibration verification standard requirements were not all met for samples 1203940432 (Non SDG 439439001PS), 1203940433 (Non SDG 439439001PSD), 439941002 (B3FKB8), 439941003 (B3FJW6) and 439941004 (B3FJX1). Trichlorofluoromethane recovered at 21.0%D/drift and Acetone recovered at 28.8%D/drift in the daily CCV analyzed on 12/16/17. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

**Quality Control (QC) Information**

**Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

<b>Sample</b>	<b>Analyte</b>	<b>Value</b>
1203940432 (Non SDG 439439001PS)	1, 4-Dichlorobenzene	67* (70%-130%)
	2-Butanone, 2-Hexanone	54* (70%-130%)
	4-Methyl-2-pentanone	68* (70%-130%)
	Acetone	45* (70%-130%)
1203940433 (Non SDG 439439001PSD)	1, 4-Dichlorobenzene	63* (70%-130%)
	2-Butanone	54* (70%-130%)

	2-Hexanone	59* (70%-130%)
	Acetone	44* (70%-130%)
	Xylenes (total)	69* (70%-130%)

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**GEL LABORATORIES LLC**  
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company  
Client SDG: GEL439941 GEL Work Order: 439941

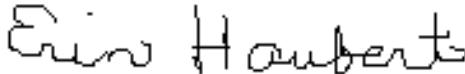
**The Qualifiers in this report are defined as follows:**

- T Spike and/or spike duplicate sample recovery is outside control limits.  
U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
DL Indicates that sample is diluted.  
RA Indicates that sample is re-analyzed without re-extraction.  
RE Indicates that sample is re-extracted.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:**  **Name:** **Erin Haubert**  
**Date:** **26 DEC 2017** **Title:** **Data Validator**

# Sample Data Summary

**Volatile  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b>	<b>GEL439941</b>	<b>Date Collected:</b>	<b>12/11/2017 12:05</b>	<b>Matrix:</b>	<b>WATER</b>
<b>Lab Sample ID:</b>	<b>439941002</b>	<b>Date Received:</b>	<b>12/13/2017 09:20</b>		
<b>Client ID:</b>	<b>B3FKB8</b>	<b>Client:</b>	<b>CPRC001</b>	<b>Project:</b>	<b>CPRC0W18012</b>
<b>Batch ID:</b>	<b>1726989</b>	<b>Method:</b>	<b>SW846 8260C</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Run Date:</b>	<b>12/16/2017 15:50</b>	<b>Inst:</b>	<b>VOA3.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Prep Date:</b>	<b>12/16/2017 15:50</b>	<b>Analyst:</b>	<b>JEB</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Data File:</b>	<b>121617V3\3G618.D</b>	<b>Column:</b>	<b>DB-624</b>		

<b>CAS No.</b>	<b>Parname</b>	<b>Qualifier</b>	<b>Result</b>	<b>Units</b>	<b>MDL/LOD</b>	<b>PQL/LOQ</b>	<b>RDL</b>
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	3.00
106-46-7	1,4-Dichlorobenzene	TU	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	TU	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0

**Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941002

<b>Date Collected:</b>	12/11/2017 12:05	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 8260C	<b>SOP Ref:</b>	GL-OA-E-038
<b>Inst:</b>	VOA3.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JEB	<b>Purge Vol:</b>	5 mL
<b>Column:</b>	DB-624		

**Client ID:** B3FKB8  
**Batch ID:** 1726989  
**Run Date:** 12/16/2017 15:50  
**Prep Date:** 12/16/2017 15:50  
**Data File:** 121617V3\3G618.D

<b>CAS No.</b>	<b>Parname</b>	<b>Qualifier</b>	<b>Result</b>	<b>Units</b>	<b>MDL/LOD</b>	<b>PQL/LOQ</b>	<b>RDL</b>
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	TU	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	TU	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

**Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941003

<b>Date Collected:</b>	12/11/2017 09:36	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 8260C	<b>SOP Ref:</b>	GL-OA-E-038
<b>Inst:</b>	VOA3.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JEB	<b>Purge Vol:</b>	5 mL
<b>Column:</b>	DB-624		

**Client ID:** B3FJW6  
**Batch ID:** 1726989  
**Run Date:** 12/16/2017 16:20  
**Prep Date:** 12/16/2017 16:20  
**Data File:** 121617V3\3G619.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	3.00
106-46-7	1,4-Dichlorobenzene	TU	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	TU	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0

**Volatile  
Certificate of Analysis  
Sample Summary**

**SDG Number:** GEL439941  
**Lab Sample ID:** 439941003

<b>Date Collected:</b>	12/11/2017 09:36	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 8260C	<b>SOP Ref:</b>	GL-OA-E-038
<b>Inst:</b>	VOA3.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JEB	<b>Purge Vol:</b>	5 mL
<b>Column:</b>	DB-624		

**Client ID:** B3FJW6  
**Batch ID:** 1726989  
**Run Date:** 12/16/2017 16:20  
**Prep Date:** 12/16/2017 16:20  
**Data File:** 121617V3\3G619.D

<b>CAS No.</b>	<b>Parname</b>	<b>Qualifier</b>	<b>Result</b>	<b>Units</b>	<b>MDL/LOD</b>	<b>PQL/LOQ</b>	<b>RDL</b>
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	TU	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	TU	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b>	<b>GEL439941</b>	<b>Date Collected:</b>	<b>12/11/2017 08:48</b>	<b>Matrix:</b>	<b>WATER</b>
<b>Lab Sample ID:</b>	<b>439941004</b>	<b>Date Received:</b>	<b>12/13/2017 09:20</b>		
<b>Client ID:</b>	<b>B3FJX1</b>	<b>Client:</b>	<b>CPRC001</b>	<b>Project:</b>	<b>CPRC0W18012</b>
<b>Batch ID:</b>	<b>1726989</b>	<b>Method:</b>	<b>SW846 8260C</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Run Date:</b>	<b>12/16/2017 16:51</b>	<b>Inst:</b>	<b>VOA3.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Prep Date:</b>	<b>12/16/2017 16:51</b>	<b>Analyst:</b>	<b>JEB</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Data File:</b>	<b>121617V3\3G620.D</b>	<b>Column:</b>	<b>DB-624</b>		

<b>CAS No.</b>	<b>Parname</b>	<b>Qualifier</b>	<b>Result</b>	<b>Units</b>	<b>MDL/LOD</b>	<b>PQL/LOQ</b>	<b>RDL</b>
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	3.00
106-46-7	1,4-Dichlorobenzene	TU	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	TU	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0

**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b>	<b>GEL439941</b>	<b>Date Collected:</b>	<b>12/11/2017 08:48</b>	<b>Matrix:</b>	<b>WATER</b>
<b>Lab Sample ID:</b>	<b>439941004</b>	<b>Date Received:</b>	<b>12/13/2017 09:20</b>		
<b>Client ID:</b>	<b>B3FJX1</b>	<b>Client:</b>	<b>CPRC001</b>	<b>Project:</b>	<b>CPRC0W18012</b>
<b>Batch ID:</b>	<b>1726989</b>	<b>Method:</b>	<b>SW846 8260C</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Run Date:</b>	<b>12/16/2017 16:51</b>	<b>Inst:</b>	<b>VOA3.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Prep Date:</b>	<b>12/16/2017 16:51</b>	<b>Analyst:</b>	<b>JEB</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Data File:</b>	<b>121617V3\3G620.D</b>	<b>Column:</b>	<b>DB-624</b>		

<b>CAS No.</b>	<b>Parname</b>	<b>Qualifier</b>	<b>Result</b>	<b>Units</b>	<b>MDL/LOD</b>	<b>PQL/LOQ</b>	<b>RDL</b>
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	TU	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	TU	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

# Quality Control Summary

**GEL LABORATORIES LLC**  
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Report Date: December 21, 2017

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**CH2MHill Plateau Remediation Company**  
**MSIN R3-50 CHPRC**  
**PO Box 1600**  
**Richland, Washington**

Contact: Mr. Scot Fitzgerald

Workorder: 439941

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1726989										
QC1203940431	LCS										
1,1,1,2-Tetrachloroethane	50.0			43.5	ug/L		87	(70%-130%)	JEB	12/16/17	08:35
1,1,1-Trichloroethane	50.0			44.8	ug/L		90	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			37.6	ug/L		75	(70%-130%)			
1,1,2-Trichloroethane	50.0			39.1	ug/L		78	(70%-130%)			
1,1-Dichloroethane	50.0			43.5	ug/L		87	(70%-130%)			
1,1-Dichloroethylene	50.0			44.9	ug/L		90	(70%-130%)			
1,2,3-Trichloropropane	50.0			40.2	ug/L		80	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			36.9	ug/L		74	(70%-130%)			
1,2-Dibromoethane	50.0			41.2	ug/L		82	(70%-130%)			
1,2-Dichloroethane	50.0			43.2	ug/L		86	(70%-130%)			
1,2-Dichloropropane	50.0			41.8	ug/L		84	(70%-130%)			
1,4-Dichlorobenzene	50.0			41.0	ug/L		82	(70%-130%)			
2-Butanone	250			214	ug/L		86	(70%-130%)			

**GEL LABORATORIES LLC**  
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>										
Batch 1726989										
2-Hexanone	250		225	ug/L		90	(70%-130%)	JEB	12/16/17	08:35
4-Methyl-2-pentanone	250		197	ug/L		79	(70%-130%)			
Acetone	250		238	ug/L		95	(70%-130%)			
Acetonitrile	1250		1030	ug/L		83	(70%-130%)			
Benzene	50.0		41.2	ug/L		82	(70%-130%)			
Bromodichloromethane	50.0		40.7	ug/L		81	(70%-130%)			
Bromoform	50.0		38.2	ug/L		76	(70%-130%)			
Bromomethane	50.0		46.0	ug/L		92	(70%-130%)			
Carbon disulfide	250		211	ug/L		84	(70%-130%)			
Carbon tetrachloride	50.0		47.5	ug/L		95	(70%-130%)			
Chlorobenzene	50.0		43.6	ug/L		87	(70%-130%)			
Chloroethane	50.0		42.8	ug/L		86	(70%-130%)			
Chloroform	50.0		42.3	ug/L		85	(70%-130%)			
Chloromethane	50.0		51.7	ug/L		103	(70%-130%)			
Dibromochloromethane	50.0		41.3	ug/L		83	(70%-130%)			

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Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>										
Batch 1726989										
Dibromomethane	50.0		40.4	ug/L		81	(70%-130%)	JEB	12/16/17	08:35
Dichlorodifluoromethane	50.0		58.8	ug/L		118	(70%-130%)			
Ethylbenzene	50.0		44.1	ug/L		88	(70%-130%)			
Iodomethane	250		212	ug/L		85	(70%-130%)			
Methylene chloride	50.0		39.9	ug/L		80	(70%-130%)			
Styrene	50.0		41.2	ug/L		82	(70%-130%)			
Tetrachloroethylene	50.0		44.3	ug/L		89	(70%-130%)			
Toluene	50.0		43.0	ug/L		86	(70%-130%)			
Trichloroethylene	50.0		44.5	ug/L		89	(70%-130%)			
Trichlorofluoromethane	50.0		54.0	ug/L		108	(70%-130%)			
Vinyl acetate	250		224	ug/L		90	(70%-130%)			
Vinyl chloride	50.0		55.7	ug/L		111	(70%-130%)			
Xylenes (total)	150		128	ug/L		86	(70%-130%)			
cis-1,2-Dichloroethylene	50.0		43.3	ug/L		87	(70%-130%)			
cis-1,3-Dichloropropylene	50.0		40.3	ug/L		81	(70%-130%)			

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>										
Batch	1726989									
trans-1,2-Dichloroethylene	50.0		47.1	ug/L		94	(70%-130%)	JEB	12/16/17	08:35
trans-1,3-Dichloropropylene	50.0		40.5	ug/L		81	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		49.2	ug/L		98	(70%-130%)			
**Bromofluorobenzene	50.0		47.5	ug/L		95	(70%-130%)			
**Toluene-d8	50.0		49.4	ug/L		99	(70%-130%)			
QC1203940430 MB 1,1,1,2-Tetrachloroethane		U	0.300	ug/L						12/16/17 11:45
1,1,1-Trichloroethane		U	0.300	ug/L						
1,1,2,2-Tetrachloroethane		U	0.300	ug/L						
1,1,2-Trichloroethane		U	0.300	ug/L						
1,1-Dichloroethane		U	0.300	ug/L						
1,1-Dichloroethylene		U	0.300	ug/L						
1,2,3-Trichloropropane		U	0.300	ug/L						
1,2-Dibromo-3-chloropropane		U	0.500	ug/L						
1,2-Dibromoethane		U	0.300	ug/L						
1,2-Dichloroethane		U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1726989										
1,2-Dichloropropane			U	0.300	ug/L				JEB	12/16/17	11:45
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromodichloromethane			U	0.300	ug/L						
Bromoform			U	0.300	ug/L						
Bromomethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1726989										
Carbon disulfide			U	1.60	ug/L				JEB	12/16/17	11:45
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						
Methacrylonitrile			U	3.00	ug/L						
Methyl methacrylate			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1726989										
Methylene chloride			U	1.60	ug/L				JEB	12/16/17	11:45
Propionitrile			U	3.00	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Trichlorofluoromethane			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1726989										
**1,2-Dichloroethane-d4	50.0			47.4	ug/L		95	(70%-130%)	JEB	12/16/17	11:45
**Bromofluorobenzene	50.0			45.9	ug/L		92	(70%-130%)			
**Toluene-d8	50.0			48.9	ug/L		98	(70%-130%)			
QC1203940432 439439001 PS											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	40.0	ug/L		80	(70%-130%)		12/16/17	17:52
1,1,1-Trichloroethane	50.0	U	0.00	40.4	ug/L		81	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	36.4	ug/L		73	(70%-130%)			
1,1,2-Trichloroethane	50.0	U	0.00	38.8	ug/L		78	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	42.3	ug/L		85	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	39.5	ug/L		79	(70%-130%)			
1,2,3-Trichloropropane	50.0	U	0.00	37.3	ug/L		75	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	35.2	ug/L		70	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00	38.3	ug/L		77	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	45.1	ug/L		90	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00	40.2	ug/L		80	(70%-130%)			
1,4-Dichlorobenzene	50.0	TU	0.00 T	33.6	ug/L		67*	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1726989										
2-Butanone	250	TU	0.00	T	136	ug/L	54 *	(70%-130%)	JEB	12/16/17	17:52
2-Hexanone	250	TU	0.00	T	136	ug/L	54 *	(70%-130%)			
4-Methyl-2-pentanone	250	TU	0.00	T	171	ug/L	68 *	(70%-130%)			
Acetone	250	TU	0.00	T	113	ug/L	45 *	(70%-130%)			
Acetonitrile	1250	U	0.00		1030	ug/L	82	(70%-130%)			
Benzene	50.0	U	0.00		39.7	ug/L	79	(70%-130%)			
Bromodichloromethane	50.0	U	0.00		40.0	ug/L	80	(70%-130%)			
Bromoform	50.0	U	0.00		38.6	ug/L	77	(70%-130%)			
Bromomethane	50.0	U	0.00		40.8	ug/L	82	(70%-130%)			
Carbon disulfide	250	U	0.00		192	ug/L	77	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00		42.7	ug/L	85	(70%-130%)			
Chlorobenzene	50.0	U	0.00		37.1	ug/L	74	(70%-130%)			
Chloroethane	50.0	U	0.00		35.5	ug/L	71	(70%-130%)			
Chloroform	50.0	J	2.83		45.7	ug/L	86	(70%-130%)			
Chloromethane	50.0	U	0.00		42.6	ug/L	85	(70%-130%)			

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Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch 1726989											
Dibromochloromethane	50.0	U	0.00	39.4	ug/L	79	(70%-130%)	JEB	12/16/17	17:52	
Dibromomethane	50.0	U	0.00	39.6	ug/L	79	(70%-130%)				
Dichlorodifluoromethane	50.0	U	0.00	46.1	ug/L	92	(70%-130%)				
Ethylbenzene	50.0	U	0.00	35.6	ug/L	71	(70%-130%)				
Iodomethane	250	U	0.00	203	ug/L	81	(70%-130%)				
Methylene chloride	50.0	U	0.00	40.8	ug/L	82	(70%-130%)				
Styrene	50.0	U	0.00	35.0	ug/L	70	(70%-130%)				
Tetrachloroethylene	50.0	U	0.00	37.0	ug/L	74	(70%-130%)				
Toluene	50.0	U	0.00	35.4	ug/L	71	(70%-130%)				
Trichloroethylene	50.0	U	0.00	40.9	ug/L	82	(70%-130%)				
Trichlorofluoromethane	50.0	U	0.00	47.8	ug/L	96	(70%-130%)				
Vinyl acetate	250	U	0.00	221	ug/L	88	(70%-130%)				
Vinyl chloride	50.0	U	0.00	42.9	ug/L	86	(70%-130%)				
Xylenes (total)	150	TU	0.00	108	ug/L	72	(70%-130%)				
cis-1,2-Dichloroethylene	50.0	U	0.00	41.4	ug/L	83	(70%-130%)				

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1726989										
cis-1,3-Dichloropropylene	50.0	U	0.00	39.0	ug/L		78	(70%-130%)	JEB	12/16/17	17:52
trans-1,2-Dichloroethylene	50.0	U	0.00	43.2	ug/L		86	(70%-130%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	38.1	ug/L		76	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		48.3	51.0	ug/L		102	(70%-130%)			
**Bromofluorobenzene	50.0		49.6	46.0	ug/L		92	(70%-130%)			
**Toluene-d8	50.0		51.6	48.0	ug/L		96	(70%-130%)			
QC1203940433 439439001 PSD											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	40.0	ug/L	0	80	(0%-20%)		12/16/17	18:23
1,1,1-Trichloroethane	50.0	U	0.00	39.7	ug/L	2	79	(0%-20%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	38.9	ug/L	7	78	(0%-20%)			
1,1,2-Trichloroethane	50.0	U	0.00	39.5	ug/L	2	79	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00	40.8	ug/L	4	82	(0%-20%)			
1,1-Dichloroethylene	50.0	U	0.00	39.6	ug/L	0	79	(0%-20%)			
1,2,3-Trichloropropane	50.0	U	0.00	40.0	ug/L	7	80	(0%-20%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	36.3	ug/L	3	73	(0%-20%)			
1,2-Dibromoethane	50.0	U	0.00	40.9	ug/L	6	82	(0%-20%)			

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Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch 1726989											
1,2-Dichloroethane	50.0	U	0.00	44.1	ug/L	2	88	(0%-20%)	JEB	12/16/17	18:23
1,2-Dichloropropane	50.0	U	0.00	40.5	ug/L	1	81	(0%-20%)			
1,4-Dichlorobenzene	50.0	TU	0.00 T	31.6	ug/L	6	63 *	(0%-20%)			
2-Butanone	250	TU	0.00 T	135	ug/L	0	54 *	(0%-20%)			
2-Hexanone	250	TU	0.00 T	147	ug/L	7	59 *	(0%-20%)			
4-Methyl-2-pentanone	250	TU	0.00	177	ug/L	4	71	(0%-20%)			
Acetone	250	TU	0.00 T	109	ug/L	3	44 *	(0%-20%)			
Acetonitrile	1250	U	0.00	1060	ug/L	3	85	(0%-20%)			
Benzene	50.0	U	0.00	38.6	ug/L	3	77	(0%-20%)			
Bromodichloromethane	50.0	U	0.00	39.6	ug/L	1	79	(0%-20%)			
Bromoform	50.0	U	0.00	40.0	ug/L	4	80	(0%-20%)			
Bromomethane	50.0	U	0.00	41.2	ug/L	1	82	(0%-20%)			
Carbon disulfide	250	U	0.00	188	ug/L	2	75	(0%-20%)			
Carbon tetrachloride	50.0	U	0.00	40.1	ug/L	6	80	(0%-20%)			
Chlorobenzene	50.0	U	0.00	37.2	ug/L	0	74	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1726989										
Chloroethane	50.0	U	0.00	42.4	ug/L	18	85	(0%-20%)	JEB	12/16/17	18:23
Chloroform	50.0	J	2.83	43.5	ug/L	5	81	(0%-20%)			
Chloromethane	50.0	U	0.00	45.2	ug/L	6	90	(0%-20%)			
Dibromochloromethane	50.0	U	0.00	40.9	ug/L	4	82	(0%-20%)			
Dibromomethane	50.0	U	0.00	39.1	ug/L	1	78	(0%-20%)			
Dichlorodifluoromethane	50.0	U	0.00	46.4	ug/L	1	93	(0%-20%)			
Ethylbenzene	50.0	U	0.00	35.1	ug/L	1	70	(0%-20%)			
Iodomethane	250	U	0.00	197	ug/L	3	79	(0%-20%)			
Methylene chloride	50.0	U	0.00	38.0	ug/L	7	76	(0%-20%)			
Styrene	50.0	U	0.00	35.3	ug/L	1	71	(0%-20%)			
Tetrachloroethylene	50.0	U	0.00	36.3	ug/L	2	73	(0%-20%)			
Toluene	50.0	U	0.00	38.3	ug/L	8	77	(0%-20%)			
Trichloroethylene	50.0	U	0.00	37.7	ug/L	8	75	(0%-20%)			
Trichlorofluoromethane	50.0	U	0.00	47.2	ug/L	1	94	(0%-20%)			
Vinyl acetate	250	U	0.00	214	ug/L	3	86	(0%-20%)			

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Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch 1726989											
Vinyl chloride	50.0	U	0.00	45.2	ug/L	5	90	(0%-20%)	JEB	12/16/17	18:23
Xylenes (total)	150	TU	0.00 T	103	ug/L	4	69 *	(0%-20%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	40.3	ug/L	3	81	(0%-20%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	36.8	ug/L	6	74	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	41.6	ug/L	4	83	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	38.5	ug/L	1	77	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		48.3	48.6	ug/L		97	(70%-130%)			
**Bromofluorobenzene	50.0		49.6	50.5	ug/L		101	(70%-130%)			
**Toluene-d8	50.0		51.6	50.5	ug/L		101	(70%-130%)			

**Notes:**

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
o	Analyte failed to recover within LCS limits (Organics only)										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

<sup>^</sup>The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

**Volatile**  
**Surrogate Recovery Report**

**SDG Number:** GEL439941

**Matrix Type:** LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203940431	LCS for batch 1726989	98	99	95
1203940430	MB for batch 1726989	95	98	92
439941002	B3FKB8	99	97	99
439941003	B3FJW6	97	98	97
439941004	B3FJX1	103	101	97
1203940432	B3FJL4PS	102	96	92
1203940433	B3FJL4PSD	97	101	101

**Surrogate****Acceptance Limits**

DCED4 = 1,2-Dichloroethane-d4 (70%-130%)

TOL = Toluene-d8 (70%-130%)

BFB = Bromofluorobenzene (70%-130%)

# Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

# Semi-Volatile Analysis

# Case Narrative

**GC/MS Semivolatile  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL439941  
Work Order #: 439941**

**Product: Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry**

**Analytical Method:** SW846 3510C/8270D

**Analytical Procedure:** GL-OA-E-009 REV# 39

**Analytical Batch:** 1725973

**Preparation Method:** SW846 3510C

**Preparation Procedure:** GL-OA-E-013 REV# 32

**Preparation Batch:** 1725968

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941003	B3FJW6
439941004	B3FJX1
1203937914	Method Blank (MB)
1203937915	Laboratory Control Sample (LCS)
1203937918	Laboratory Control Sample Duplicate (LCSD)
1203937921	439941003(B3FJW6) Matrix Spike (MS)
1203937922	439941003(B3FJW6) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Quality Control (QC) Information**

**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was analyzed along with an MS/MSD pair in this batch.

**Laboratory Control Sample (LCS) Recovery**

The LCS and/or LCSD (See Below) spike recoveries were not within the acceptance limits. The client established the limits of 70%-130%. Failures are expected. The data were reported per client request.

Sample	Analyte	Value
1203937915 (LCS)	Several	See applicable report
1203937918 (LCSD)	Several	See applicable report

**Product: Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry****Analytical Method:** SW846 3510C/8270D**Analytical Procedure:** GL-OA-E-009 REV# 39**Analytical Batch:** 1726826**Preparation Method:** SW846 3510C**Preparation Procedure:** GL-OA-E-013 REV# 32**Preparation Batch:** 1726824

The following samples were analyzed using the above methods and analytical procedure(s).

**GEL Sample ID#**      **Client Sample Identification**

439941002	B3FKB8
1203940034	Method Blank (MB)
1203940035	Laboratory Control Sample (LCS)
1203940053	439941002(B3FKB8) Matrix Spike (MS)
1203940054	439941002(B3FKB8) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information****CCV Requirements**

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for sample 439941002 (B3FKB8) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

**Quality Control (QC) Information****Laboratory Control Sample (LCS) Recovery**

The LCS and/or LCSD (See Below) spike recoveries were not within the acceptance limits. The client established the limits of 70%-130%. Failures are expected. The data were reported per client request.

Sample	Analyte	Value
1203940035 (LCS)	Several	See applicable report

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**GEL LABORATORIES LLC**  
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company  
Client SDG: GEL439941 GEL Work Order: 439941

**The Qualifiers in this report are defined as follows:**

J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:** 

**Name:** Barbara Bailey

**Date:** 20 DEC 2017

**Title:** Data Validator

# Sample Data Summary

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941002

<b>Date Collected:</b>	12/11/2017 12:05	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1100 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FKB8  
**Batch ID:** 1726826  
**Run Date:** 12/18/2017 19:44  
**Prep Date:** 12/18/2017 07:30  
**Data File:** s121817.B\s111820.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	2.73	ug/L	2.73	9.09
120-82-1	1,2,4-Trichlorobenzene	U	2.73	ug/L	2.73	9.09
95-50-1	1,2-Dichlorobenzene	U	2.73	ug/L	2.73	9.09
99-35-4	1,3,5-Trinitrobenzene	U	2.73	ug/L	2.73	9.09
541-73-1	1,3-Dichlorobenzene	U	2.73	ug/L	2.73	9.09
106-46-7	1,4-Dichlorobenzene	U	2.73	ug/L	2.73	9.09
123-91-1	1,4-Dioxane	U	2.73	ug/L	2.73	9.09
130-15-4	1,4-Naphthoquinone	U	2.73	ug/L	2.73	9.09
134-32-7	1-Naphthylamine	U	2.73	ug/L	2.73	9.09
58-90-2	2,3,4,6-Tetrachlorophenol	U	2.73	ug/L	2.73	9.09
95-95-4	2,4,5-Trichlorophenol	U	2.73	ug/L	2.73	9.09
88-06-2	2,4,6-Trichlorophenol	U	2.73	ug/L	2.73	9.09
120-83-2	2,4-Dichlorophenol	U	2.73	ug/L	2.73	9.09
105-67-9	2,4-Dimethylphenol	U	2.73	ug/L	2.73	9.09
51-28-5	2,4-Dinitrophenol	U	4.55	ug/L	4.55	18.2
121-14-2	2,4-Dinitrotoluene	U	2.73	ug/L	2.73	9.09
87-65-0	2,6-Dichlorophenol	U	2.73	ug/L	2.73	9.09
606-20-2	2,6-Dinitrotoluene	U	2.73	ug/L	2.73	9.09
53-96-3	2-Acetylaminofluorene	U	2.73	ug/L	2.73	9.09
91-58-7	2-Chloronaphthalene	U	0.373	ug/L	0.373	0.909
95-57-8	2-Chlorophenol	U	2.73	ug/L	2.73	9.09
534-52-1	2-Methyl-4,6-dinitrophenol	U	2.73	ug/L	2.73	9.09
91-57-6	2-Methylnaphthalene	U	0.273	ug/L	0.273	0.909
91-59-8	2-Naphthylamine	U	2.73	ug/L	2.73	9.09
88-75-5	2-Nitrophenol	U	2.73	ug/L	2.73	9.09
109-06-8	2-Picoline	U	2.73	ug/L	2.73	9.09
91-94-1	3,3'-Dichlorobenzidine	U	2.73	ug/L	2.73	9.09
119-93-7	3,3'-Dimethylbenzidine	U	3.00	ug/L	3.00	9.09
56-49-5	3-Methylcholanthrene	U	2.73	ug/L	2.73	9.09
92-67-1	4-Aminobiphenyl	U	2.73	ug/L	2.73	9.09
101-55-3	4-Bromophenylphenylether	U	2.73	ug/L	2.73	9.09
59-50-7	4-Chloro-3-methylphenol	U	2.73	ug/L	2.73	9.09
106-47-8	4-Chloroaniline	U	3.00	ug/L	3.00	9.09
7005-72-3	4-Chlorophenylphenylether	U	2.73	ug/L	2.73	9.09
100-02-7	4-Nitrophenol	U	2.73	ug/L	2.73	9.09
56-57-5	4-Nitroquinoline-1-oxide	U	3.45	ug/L	3.45	9.09
99-55-8	5-Nitro-o-toluidine	U	2.73	ug/L	2.73	9.09
57-97-6	7,12-Dimethylbenz(a)anthracene	U	2.73	ug/L	2.73	9.09
	7,12Dimethylbenz(a)anthracene					

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941002  
**Client ID:** B3FKB8  
**Batch ID:** 1726826  
**Run Date:** 12/18/2017 19:44  
**Prep Date:** 12/18/2017 07:30  
**Data File:** s121817.B\s111820.D

**Date Collected:** 12/11/2017 12:05      **Matrix:** WATER  
**Date Received:** 12/13/2017 09:20  
**Client:** CPRC001      **Project:** CPRC0W18012  
**Method:** SW846 3510C/8270D      **SOP Ref:** GL-OA-E-009  
**Inst:** MSD1.I      **Dilution:** 1  
**Analyst:** JMB3      **Inj. Vol:** 1 uL  
**Aliquot:** 1100 mL      **Final Volume:** 1 mL  
**Column:** 25x.20x.33

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	0.273	ug/L	0.273	0.909
208-96-8	Acenaphthylene	U	0.273	ug/L	0.273	0.909
98-86-2	Acetophenone	U	2.73	ug/L	2.73	9.09
62-53-3	Aniline	U	3.82	ug/L	3.82	9.09
120-12-7	Anthracene	U	0.273	ug/L	0.273	0.909
140-57-8	Aramite	U	3.36	ug/L	3.36	9.09
56-55-3	Benzo(a)anthracene	U	0.273	ug/L	0.273	0.909
50-32-8	Benzo(a)pyrene	U	0.273	ug/L	0.273	0.909
205-99-2	Benzo(b)fluoranthene	U	0.273	ug/L	0.273	0.909
191-24-2	Benzo(ghi)perylene	U	0.273	ug/L	0.273	0.909
207-08-9	Benzo(k)fluoranthene	U	0.273	ug/L	0.273	0.909
100-51-6	Benzyl alcohol	U	2.73	ug/L	2.73	9.09
85-68-7	Butylbenzylphthalate	U	2.73	ug/L	2.73	9.09
86-74-8	Carbazole	U	0.273	ug/L	0.273	0.909
510-15-6	Chlorobenzilate	U	2.73	ug/L	2.73	9.09
218-01-9	Chrysene	U	0.273	ug/L	0.273	0.909
84-74-2	Di-n-butylphthalate	U	2.73	ug/L	2.73	9.09
117-84-0	Di-n-octylphthalate	U	2.73	ug/L	2.73	9.09
2303-16-4	Diallate	U	2.73	ug/L	2.73	9.09
53-70-3	Dibenzo(a,h)anthracene	U	0.273	ug/L	0.273	0.909
132-64-9	Dibenzofuran	U	2.73	ug/L	2.73	9.09
84-66-2	Diethylphthalate	U	2.73	ug/L	2.73	9.09
60-51-5	Dimethoate	U	2.73	ug/L	2.73	9.09
131-11-3	Dimethylphthalate	U	2.73	ug/L	2.73	9.09
88-85-7	Dinoseb	U	2.73	ug/L	2.73	9.09
298-04-4	Disulfoton	U	2.73	ug/L	2.73	9.09
62-50-0	Ethyl Methanesulfonate	U	2.73	ug/L	2.73	9.09
52-85-7	Famphur	U	4.55	ug/L	4.55	9.09
206-44-0	Fluoranthene	U	0.273	ug/L	0.273	0.909
86-73-7	Fluorene	U	0.273	ug/L	0.273	0.909
118-74-1	Hexachlorobenzene	U	2.73	ug/L	2.73	9.09
87-68-3	Hexachlorobutadiene	U	2.73	ug/L	2.73	9.09
77-47-4	Hexachlorocyclopentadiene	U	2.73	ug/L	2.73	9.09
67-72-1	Hexachloroethane	U	2.73	ug/L	2.73	9.09
70-30-4	Hexachlorophene	U	152	ug/L	152	455
1888-71-7	Hexachloropropene	U	2.73	ug/L	2.73	9.09
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.273	ug/L	0.273	0.909
465-73-6	Isodrin	U	2.73	ug/L	2.73	9.09

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941002

<b>Date Collected:</b>	12/11/2017 12:05	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1100 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FKB8  
**Batch ID:** 1726826  
**Run Date:** 12/18/2017 19:44  
**Prep Date:** 12/18/2017 07:30  
**Data File:** s121817.B\s111820.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
78-59-1	Isophorone	U	3.18	ug/L	3.18	9.09
120-58-1	Isosafrole	U	2.73	ug/L	2.73	9.09
143-50-0	Kepone	U	2.73	ug/L	2.73	9.09
91-80-5	Methapyrilene	U	2.73	ug/L	2.73	9.09
66-27-3	Methyl methanesulfonate	U	2.73	ug/L	2.73	9.09
298-00-0	Methyl parathion	U	2.73	ug/L	2.73	9.09
62-75-9	N-Methyl-N-nitrosomethylamine	U	2.73	ug/L	2.73	9.09
924-16-3	N-Nitrosodi-n-butylamine	U	2.73	ug/L	2.73	9.09
55-18-5	N-Nitrosodiethylamine	U	2.73	ug/L	2.73	9.09
621-64-7	N-Nitrosodipropylamine	U	2.73	ug/L	2.73	9.09
10595-95-6	N-Nitrosomethylalkylamine	U	2.73	ug/L	2.73	9.09
59-89-2	N-Nitrosomorpholine	U	2.73	ug/L	2.73	9.09
100-75-4	N-Nitrosopiperidine	U	2.73	ug/L	2.73	9.09
930-55-2	N-Nitrosopyrrolidine	U	2.73	ug/L	2.73	9.09
91-20-3	Naphthalene	U	0.273	ug/L	0.273	0.909
98-95-3	Nitrobenzene	U	2.73	ug/L	2.73	9.09
56-38-2	Parathion	U	2.73	ug/L	2.73	9.09
608-93-5	Pentachlorobenzene	U	2.73	ug/L	2.73	9.09
76-01-7	Pentachloroethane	U	2.73	ug/L	2.73	9.09
82-68-8	Pentachloronitrobenzene	U	3.09	ug/L	3.09	9.09
87-86-5	Pentachlorophenol	U	2.73	ug/L	2.73	9.09
62-44-2	Phenacetin	U	2.73	ug/L	2.73	9.09
85-01-8	Phenanthrene	U	0.273	ug/L	0.273	0.909
108-95-2	Phenol	U	2.73	ug/L	2.73	9.09
298-02-2	Phorate	U	2.73	ug/L	2.73	9.09
23950-58-5	Pronamide	U	2.73	ug/L	2.73	9.09
129-00-0	Pyrene	U	0.273	ug/L	0.273	0.909
110-86-1	Pyridine	U	2.73	ug/L	2.73	9.09
94-59-7	Safrole	U	2.73	ug/L	2.73	9.09
3689-24-5	Sulfotep	U	2.73	ug/L	2.73	9.09
297-97-2	Thionazin	U	2.73	ug/L	2.73	9.09
126-73-8	Tributylphosphate	U	2.73	ug/L	2.73	9.09
126-68-1	Triethylphosphorothioate	U	2.73	ug/L	2.73	9.09
122-09-8	a,a-Dimethylphenethylamine	U	4.91	ug/L	4.91	9.09
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	2.73	ug/L	2.73	9.09
111-91-1	bis(2-Chloroethoxy)methane	U	2.73	ug/L	2.73	9.09
111-44-4	bis(2-Chloroethyl) ether	U	2.73	ug/L	2.73	9.09
117-81-7	bis(2-Ethylhexyl)phthalate	U	2.73	ug/L	2.73	9.09

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941

**Lab Sample ID:** 439941002

**Date Collected:** 12/11/2017 12:05

**Matrix:** WATER

**Client ID:** B3FKB8

**Date Received:** 12/13/2017 09:20

**Project:** CPRC0W18012

**Batch ID:** 1726826

**Client:** CPRC001

**SOP Ref:** GL-OA-E-009

**Run Date:** 12/18/2017 19:44

**Method:** SW846 3510C/8270D

**Dilution:** 1

**Prep Date:** 12/18/2017 07:30

**Inst:** MSD1.I

**Inj. Vol:** 1 uL

**Data File:** s121817.B\s111820.D

**Analyst:** JMB3

**Final Volume:** 1 mL

**Aliquot:** 1100 mL

**Column:** 25x.20x.33

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DPA+NNDPA	diphenylamine+N-nitrosodiphenylamine	U	2.73	ug/L	2.73	9.09
122-39-4	<i>Diphenylamine</i>					
65794-96-9	m,p-Cresols	U	3.36	ug/L	3.36	9.09
99-65-0	m-Dinitrobenzene	U	2.73	ug/L	2.73	9.09
99-09-2	m-Nitroaniline	U	2.73	ug/L	2.73	9.09
95-48-7	o-Cresol	U	2.73	ug/L	2.73	9.09
88-74-4	o-Nitroaniline	U	2.73	ug/L	2.73	9.09
95-53-4	o-Toluidine	U	2.73	ug/L	2.73	9.09
60-11-7	p-(Dimethylamino)azobenzene	U	2.73	ug/L	2.73	9.09
100-01-6	p-Nitroaniline	U	2.73	ug/L	2.73	9.09
106-50-3	p-Phenylenediamine	U	90.9	ug/L	90.9	455

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941003

<b>Date Collected:</b>	12/11/2017 09:36	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1120 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FJW6  
**Batch ID:** 1725973  
**Run Date:** 12/18/2017 13:27  
**Prep Date:** 12/14/2017 18:07  
**Data File:** s121817.B\s111808.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	2.68	ug/L	2.68	8.93
120-82-1	1,2,4-Trichlorobenzene	U	2.68	ug/L	2.68	8.93
95-50-1	1,2-Dichlorobenzene	U	2.68	ug/L	2.68	8.93
99-35-4	1,3,5-Trinitrobenzene	U	2.68	ug/L	2.68	8.93
541-73-1	1,3-Dichlorobenzene	U	2.68	ug/L	2.68	8.93
106-46-7	1,4-Dichlorobenzene	U	2.68	ug/L	2.68	8.93
123-91-1	1,4-Dioxane	U	2.68	ug/L	2.68	8.93
130-15-4	1,4-Naphthoquinone	U	2.68	ug/L	2.68	8.93
134-32-7	1-Naphthylamine	U	2.68	ug/L	2.68	8.93
58-90-2	2,3,4,6-Tetrachlorophenol	U	2.68	ug/L	2.68	8.93
95-95-4	2,4,5-Trichlorophenol	U	2.68	ug/L	2.68	8.93
88-06-2	2,4,6-Trichlorophenol	U	2.68	ug/L	2.68	8.93
120-83-2	2,4-Dichlorophenol	U	2.68	ug/L	2.68	8.93
105-67-9	2,4-Dimethylphenol	U	2.68	ug/L	2.68	8.93
51-28-5	2,4-Dinitrophenol	U	4.46	ug/L	4.46	17.9
121-14-2	2,4-Dinitrotoluene	U	2.68	ug/L	2.68	8.93
87-65-0	2,6-Dichlorophenol	U	2.68	ug/L	2.68	8.93
606-20-2	2,6-Dinitrotoluene	U	2.68	ug/L	2.68	8.93
53-96-3	2-Acetylaminofluorene	U	2.68	ug/L	2.68	8.93
91-58-7	2-Chloronaphthalene	U	0.366	ug/L	0.366	0.893
95-57-8	2-Chlorophenol	U	2.68	ug/L	2.68	8.93
534-52-1	2-Methyl-4,6-dinitrophenol	U	2.68	ug/L	2.68	8.93
91-57-6	2-Methylnaphthalene	U	0.268	ug/L	0.268	0.893
91-59-8	2-Naphthylamine	U	2.68	ug/L	2.68	8.93
88-75-5	2-Nitrophenol	U	2.68	ug/L	2.68	8.93
109-06-8	2-Picoline	U	2.68	ug/L	2.68	8.93
91-94-1	3,3'-Dichlorobenzidine	U	2.68	ug/L	2.68	8.93
119-93-7	3,3'-Dimethylbenzidine	U	2.95	ug/L	2.95	8.93
56-49-5	3-Methylcholanthrene	U	2.68	ug/L	2.68	8.93
92-67-1	4-Aminobiphenyl	U	2.68	ug/L	2.68	8.93
101-55-3	4-Bromophenylphenylether	U	2.68	ug/L	2.68	8.93
59-50-7	4-Chloro-3-methylphenol	U	2.68	ug/L	2.68	8.93
106-47-8	4-Chloroaniline	U	2.95	ug/L	2.95	8.93
7005-72-3	4-Chlorophenylphenylether	U	2.68	ug/L	2.68	8.93
100-02-7	4-Nitrophenol	U	2.68	ug/L	2.68	8.93
56-57-5	4-Nitroquinoline-1-oxide	U	3.39	ug/L	3.39	8.93
99-55-8	5-Nitro-o-toluidine	U	2.68	ug/L	2.68	8.93
57-97-6	7,12-Dimethylbenz(a)anthracene	U	2.68	ug/L	2.68	8.93
	7,12Dimethylbenz(a)anthracene					

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941003

<b>Date Collected:</b>	12/11/2017 09:36	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1120 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FJW6  
**Batch ID:** 1725973  
**Run Date:** 12/18/2017 13:27  
**Prep Date:** 12/14/2017 18:07  
**Data File:** s121817.B\s111808.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	0.268	ug/L	0.268	0.893
208-96-8	Acenaphthylene	U	0.268	ug/L	0.268	0.893
98-86-2	Acetophenone	U	2.68	ug/L	2.68	8.93
62-53-3	Aniline	U	3.75	ug/L	3.75	8.93
120-12-7	Anthracene	U	0.268	ug/L	0.268	0.893
140-57-8	Aramite	U	3.30	ug/L	3.30	8.93
56-55-3	Benzo(a)anthracene	U	0.268	ug/L	0.268	0.893
50-32-8	Benzo(a)pyrene	U	0.268	ug/L	0.268	0.893
205-99-2	Benzo(b)fluoranthene	U	0.268	ug/L	0.268	0.893
191-24-2	Benzo(ghi)perylene	U	0.268	ug/L	0.268	0.893
207-08-9	Benzo(k)fluoranthene	U	0.268	ug/L	0.268	0.893
100-51-6	Benzyl alcohol	U	2.68	ug/L	2.68	8.93
85-68-7	Butylbenzylphthalate	U	2.68	ug/L	2.68	8.93
86-74-8	Carbazole	U	0.268	ug/L	0.268	0.893
510-15-6	Chlorobenzilate	U	2.68	ug/L	2.68	8.93
218-01-9	Chrysene	U	0.268	ug/L	0.268	0.893
84-74-2	Di-n-butylphthalate	U	2.68	ug/L	2.68	8.93
117-84-0	Di-n-octylphthalate	U	2.68	ug/L	2.68	8.93
2303-16-4	Diallate	U	2.68	ug/L	2.68	8.93
53-70-3	Dibenzo(a,h)anthracene	U	0.268	ug/L	0.268	0.893
132-64-9	Dibenzofuran	U	2.68	ug/L	2.68	8.93
84-66-2	Diethylphthalate	U	2.68	ug/L	2.68	8.93
60-51-5	Dimethoate	U	2.68	ug/L	2.68	8.93
131-11-3	Dimethylphthalate	U	2.68	ug/L	2.68	8.93
88-85-7	Dinoseb	U	2.68	ug/L	2.68	8.93
298-04-4	Disulfoton	U	2.68	ug/L	2.68	8.93
62-50-0	Ethyl Methanesulfonate	U	2.68	ug/L	2.68	8.93
52-85-7	Famphur	U	4.46	ug/L	4.46	8.93
206-44-0	Fluoranthene	U	0.268	ug/L	0.268	0.893
86-73-7	Fluorene	U	0.268	ug/L	0.268	0.893
118-74-1	Hexachlorobenzene	U	2.68	ug/L	2.68	8.93
87-68-3	Hexachlorobutadiene	U	2.68	ug/L	2.68	8.93
77-47-4	Hexachlorocyclopentadiene	U	2.68	ug/L	2.68	8.93
67-72-1	Hexachloroethane	U	2.68	ug/L	2.68	8.93
70-30-4	Hexachlorophene	U	149	ug/L	149	446
1888-71-7	Hexachloropropene	U	2.68	ug/L	2.68	8.93
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.268	ug/L	0.268	0.893
465-73-6	Isodrin	U	2.68	ug/L	2.68	8.93

**Semi-Volatile  
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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941003

<b>Date Collected:</b>	12/11/2017 09:36	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1120 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FJW6  
**Batch ID:** 1725973  
**Run Date:** 12/18/2017 13:27  
**Prep Date:** 12/14/2017 18:07  
**Data File:** s121817.B\s111808.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
78-59-1	Isophorone	U	3.13	ug/L	3.13	8.93
120-58-1	Isosafrole	U	2.68	ug/L	2.68	8.93
143-50-0	Kepone	U	2.68	ug/L	2.68	8.93
91-80-5	Methapyrilene	U	2.68	ug/L	2.68	8.93
66-27-3	Methyl methanesulfonate	U	2.68	ug/L	2.68	8.93
298-00-0	Methyl parathion	U	2.68	ug/L	2.68	8.93
62-75-9	N-Methyl-N-nitrosomethylamine	U	2.68	ug/L	2.68	8.93
924-16-3	N-Nitrosodi-n-butylamine	U	2.68	ug/L	2.68	8.93
55-18-5	N-Nitrosodiethylamine	U	2.68	ug/L	2.68	8.93
621-64-7	N-Nitrosodipropylamine	U	2.68	ug/L	2.68	8.93
10595-95-6	N-Nitrosomethylalkylamine	U	2.68	ug/L	2.68	8.93
59-89-2	N-Nitrosomorpholine	U	2.68	ug/L	2.68	8.93
100-75-4	N-Nitrosopiperidine	U	2.68	ug/L	2.68	8.93
930-55-2	N-Nitrosopyrrolidine	U	2.68	ug/L	2.68	8.93
91-20-3	Naphthalene	U	0.268	ug/L	0.268	0.893
98-95-3	Nitrobenzene	U	2.68	ug/L	2.68	8.93
56-38-2	Parathion	U	2.68	ug/L	2.68	8.93
608-93-5	Pentachlorobenzene	U	2.68	ug/L	2.68	8.93
76-01-7	Pentachloroethane	U	2.68	ug/L	2.68	8.93
82-68-8	Pentachloronitrobenzene	U	3.04	ug/L	3.04	8.93
87-86-5	Pentachlorophenol	U	2.68	ug/L	2.68	8.93
62-44-2	Phenacetin	U	2.68	ug/L	2.68	8.93
85-01-8	Phenanthrene	U	0.268	ug/L	0.268	0.893
108-95-2	Phenol	U	2.68	ug/L	2.68	8.93
298-02-2	Phorate	U	2.68	ug/L	2.68	8.93
23950-58-5	Pronamide	U	2.68	ug/L	2.68	8.93
129-00-0	Pyrene	U	0.268	ug/L	0.268	0.893
110-86-1	Pyridine	U	2.68	ug/L	2.68	8.93
94-59-7	Safrole	U	2.68	ug/L	2.68	8.93
3689-24-5	Sulfotep	U	2.68	ug/L	2.68	8.93
297-97-2	Thionazin	U	2.68	ug/L	2.68	8.93
126-73-8	Tributylphosphate	U	2.68	ug/L	2.68	8.93
126-68-1	Triethylphosphorothioate	U	2.68	ug/L	2.68	8.93
122-09-8	a,a-Dimethylphenethylamine	U	4.82	ug/L	4.82	8.93
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	2.68	ug/L	2.68	8.93
111-91-1	bis(2-Chloroethoxy)methane	U	2.68	ug/L	2.68	8.93
111-44-4	bis(2-Chloroethyl) ether	U	2.68	ug/L	2.68	8.93
117-81-7	bis(2-Ethylhexyl)phthalate	U	2.68	ug/L	2.68	8.93

**Semi-Volatile  
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SDG Number: GEL439941

Lab Sample ID: 439941003

Date Collected:	12/11/2017 09:36	Matrix:	WATER
Date Received:	12/13/2017 09:20		
Client:	CPRC001	Project:	CPRC0W18012
Method:	SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Inst:	MSD1.I	Dilution:	1
Analyst:	JMB3	Inj. Vol:	1 uL
Aliquot:	1120 mL	Final Volume:	1 mL
Column:	25x.20x.33		

Client ID: B3FJW6  
 Batch ID: 1725973  
 Run Date: 12/18/2017 13:27  
 Prep Date: 12/14/2017 18:07  
 Data File: s121817.B\s111808.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DPA+NNDPA	diphenylamine+N-nitrosodiphenylamine	U	2.68	ug/L	2.68	8.93
122-39-4	<i>Diphenylamine</i>					
65794-96-9	m,p-Cresols	U	3.30	ug/L	3.30	8.93
99-65-0	m-Dinitrobenzene	U	2.68	ug/L	2.68	8.93
99-09-2	m-Nitroaniline	U	2.68	ug/L	2.68	8.93
95-48-7	o-Cresol	U	2.68	ug/L	2.68	8.93
88-74-4	o-Nitroaniline	U	2.68	ug/L	2.68	8.93
95-53-4	o-Toluidine	U	2.68	ug/L	2.68	8.93
60-11-7	p-(Dimethylamino)azobenzene	U	2.68	ug/L	2.68	8.93
100-01-6	p-Nitroaniline	U	2.68	ug/L	2.68	8.93
106-50-3	p-Phenylenediamine	U	89.3	ug/L	89.3	446

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941004

<b>Date Collected:</b>	12/11/2017 08:48	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1040 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FJX1  
**Batch ID:** 1725973  
**Run Date:** 12/18/2017 15:00  
**Prep Date:** 12/14/2017 18:07  
**Data File:** s121817.B\s111811.D

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	2.88	ug/L	2.88	9.62
120-82-1	1,2,4-Trichlorobenzene	U	2.88	ug/L	2.88	9.62
95-50-1	1,2-Dichlorobenzene	U	2.88	ug/L	2.88	9.62
99-35-4	1,3,5-Trinitrobenzene	U	2.88	ug/L	2.88	9.62
541-73-1	1,3-Dichlorobenzene	U	2.88	ug/L	2.88	9.62
106-46-7	1,4-Dichlorobenzene	U	2.88	ug/L	2.88	9.62
123-91-1	1,4-Dioxane	U	2.88	ug/L	2.88	9.62
130-15-4	1,4-Naphthoquinone	U	2.88	ug/L	2.88	9.62
134-32-7	1-Naphthylamine	U	2.88	ug/L	2.88	9.62
58-90-2	2,3,4,6-Tetrachlorophenol	U	2.88	ug/L	2.88	9.62
95-95-4	2,4,5-Trichlorophenol	U	2.88	ug/L	2.88	9.62
88-06-2	2,4,6-Trichlorophenol	U	2.88	ug/L	2.88	9.62
120-83-2	2,4-Dichlorophenol	U	2.88	ug/L	2.88	9.62
105-67-9	2,4-Dimethylphenol	U	2.88	ug/L	2.88	9.62
51-28-5	2,4-Dinitrophenol	U	4.81	ug/L	4.81	19.2
121-14-2	2,4-Dinitrotoluene	U	2.88	ug/L	2.88	9.62
87-65-0	2,6-Dichlorophenol	U	2.88	ug/L	2.88	9.62
606-20-2	2,6-Dinitrotoluene	U	2.88	ug/L	2.88	9.62
53-96-3	2-Acetylaminofluorene	U	2.88	ug/L	2.88	9.62
91-58-7	2-Chloronaphthalene	U	0.394	ug/L	0.394	0.962
95-57-8	2-Chlorophenol	U	2.88	ug/L	2.88	9.62
534-52-1	2-Methyl-4,6-dinitrophenol	U	2.88	ug/L	2.88	9.62
91-57-6	2-Methylnaphthalene	U	0.288	ug/L	0.288	0.962
91-59-8	2-Naphthylamine	U	2.88	ug/L	2.88	9.62
88-75-5	2-Nitrophenol	U	2.88	ug/L	2.88	9.62
109-06-8	2-Picoline	U	2.88	ug/L	2.88	9.62
91-94-1	3,3'-Dichlorobenzidine	U	2.88	ug/L	2.88	9.62
119-93-7	3,3'-Dimethylbenzidine	U	3.17	ug/L	3.17	9.62
56-49-5	3-Methylcholanthrene	U	2.88	ug/L	2.88	9.62
92-67-1	4-Aminobiphenyl	U	2.88	ug/L	2.88	9.62
101-55-3	4-Bromophenylphenylether	U	2.88	ug/L	2.88	9.62
59-50-7	4-Chloro-3-methylphenol	U	2.88	ug/L	2.88	9.62
106-47-8	4-Chloroaniline	U	3.17	ug/L	3.17	9.62
7005-72-3	4-Chlorophenylphenylether	U	2.88	ug/L	2.88	9.62
100-02-7	4-Nitrophenol	U	2.88	ug/L	2.88	9.62
56-57-5	4-Nitroquinoline-1-oxide	U	3.65	ug/L	3.65	9.62
99-55-8	5-Nitro-o-toluidine	U	2.88	ug/L	2.88	9.62
57-97-6	7,12-Dimethylbenz(a)anthracene	U	2.88	ug/L	2.88	9.62
	7,12Dimethylbenz(a)anthracene					

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941004

<b>Date Collected:</b>	12/11/2017 08:48	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1040 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FJX1  
**Batch ID:** 1725973  
**Run Date:** 12/18/2017 15:00  
**Prep Date:** 12/14/2017 18:07  
**Data File:** s121817.B\s111811.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	0.288	ug/L	0.288	0.962
208-96-8	Acenaphthylene	U	0.288	ug/L	0.288	0.962
98-86-2	Acetophenone	U	2.88	ug/L	2.88	9.62
62-53-3	Aniline	U	4.04	ug/L	4.04	9.62
120-12-7	Anthracene	U	0.288	ug/L	0.288	0.962
140-57-8	Aramite	U	3.56	ug/L	3.56	9.62
56-55-3	Benzo(a)anthracene	U	0.288	ug/L	0.288	0.962
50-32-8	Benzo(a)pyrene	U	0.288	ug/L	0.288	0.962
205-99-2	Benzo(b)fluoranthene	U	0.288	ug/L	0.288	0.962
191-24-2	Benzo(ghi)perylene	U	0.288	ug/L	0.288	0.962
207-08-9	Benzo(k)fluoranthene	U	0.288	ug/L	0.288	0.962
100-51-6	Benzyl alcohol	U	2.88	ug/L	2.88	9.62
85-68-7	Butylbenzylphthalate	U	2.88	ug/L	2.88	9.62
86-74-8	Carbazole	U	0.288	ug/L	0.288	0.962
510-15-6	Chlorobenzilate	U	2.88	ug/L	2.88	9.62
218-01-9	Chrysene	U	0.288	ug/L	0.288	0.962
84-74-2	Di-n-butylphthalate	U	2.88	ug/L	2.88	9.62
117-84-0	Di-n-octylphthalate	U	2.88	ug/L	2.88	9.62
2303-16-4	Diallate	U	2.88	ug/L	2.88	9.62
53-70-3	Dibenzo(a,h)anthracene	U	0.288	ug/L	0.288	0.962
132-64-9	Dibenzofuran	U	2.88	ug/L	2.88	9.62
84-66-2	Diethylphthalate	U	2.88	ug/L	2.88	9.62
60-51-5	Dimethoate	U	2.88	ug/L	2.88	9.62
131-11-3	Dimethylphthalate	U	2.88	ug/L	2.88	9.62
88-85-7	Dinoseb	U	2.88	ug/L	2.88	9.62
298-04-4	Disulfoton	U	2.88	ug/L	2.88	9.62
62-50-0	Ethyl Methanesulfonate	U	2.88	ug/L	2.88	9.62
52-85-7	Famphur	U	4.81	ug/L	4.81	9.62
206-44-0	Fluoranthene	U	0.288	ug/L	0.288	0.962
86-73-7	Fluorene	U	0.288	ug/L	0.288	0.962
118-74-1	Hexachlorobenzene	U	2.88	ug/L	2.88	9.62
87-68-3	Hexachlorobutadiene	U	2.88	ug/L	2.88	9.62
77-47-4	Hexachlorocyclopentadiene	U	2.88	ug/L	2.88	9.62
67-72-1	Hexachloroethane	U	2.88	ug/L	2.88	9.62
70-30-4	Hexachlorophene	U	161	ug/L	161	481
1888-71-7	Hexachloropropene	U	2.88	ug/L	2.88	9.62
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.288	ug/L	0.288	0.962
465-73-6	Isodrin	U	2.88	ug/L	2.88	9.62

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941004

<b>Date Collected:</b>	12/11/2017 08:48	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1040 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FJX1  
**Batch ID:** 1725973  
**Run Date:** 12/18/2017 15:00  
**Prep Date:** 12/14/2017 18:07  
**Data File:** s121817.B\s111811.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
78-59-1	Isophorone	U	3.37	ug/L	3.37	9.62
120-58-1	Isosafrole	U	2.88	ug/L	2.88	9.62
143-50-0	Kepone	U	2.88	ug/L	2.88	9.62
91-80-5	Methapyrilene	U	2.88	ug/L	2.88	9.62
66-27-3	Methyl methanesulfonate	U	2.88	ug/L	2.88	9.62
298-00-0	Methyl parathion	U	2.88	ug/L	2.88	9.62
62-75-9	N-Methyl-N-nitrosomethylamine	U	2.88	ug/L	2.88	9.62
924-16-3	N-Nitrosodi-n-butylamine	U	2.88	ug/L	2.88	9.62
55-18-5	N-Nitrosodiethylamine	U	2.88	ug/L	2.88	9.62
621-64-7	N-Nitrosodipropylamine	U	2.88	ug/L	2.88	9.62
10595-95-6	N-Nitrosomethylalkylamine	U	2.88	ug/L	2.88	9.62
59-89-2	N-Nitrosomorpholine	U	2.88	ug/L	2.88	9.62
100-75-4	N-Nitrosopiperidine	U	2.88	ug/L	2.88	9.62
930-55-2	N-Nitrosopyrrolidine	U	2.88	ug/L	2.88	9.62
91-20-3	Naphthalene	U	0.288	ug/L	0.288	0.962
98-95-3	Nitrobenzene	U	2.88	ug/L	2.88	9.62
56-38-2	Parathion	U	2.88	ug/L	2.88	9.62
608-93-5	Pentachlorobenzene	U	2.88	ug/L	2.88	9.62
76-01-7	Pentachloroethane	U	2.88	ug/L	2.88	9.62
82-68-8	Pentachloronitrobenzene	U	3.27	ug/L	3.27	9.62
87-86-5	Pentachlorophenol	U	2.88	ug/L	2.88	9.62
62-44-2	Phenacetin	U	2.88	ug/L	2.88	9.62
85-01-8	Phenanthrene	U	0.288	ug/L	0.288	0.962
108-95-2	Phenol	U	2.88	ug/L	2.88	9.62
298-02-2	Phorate	U	2.88	ug/L	2.88	9.62
23950-58-5	Pronamide	U	2.88	ug/L	2.88	9.62
129-00-0	Pyrene	U	0.288	ug/L	0.288	0.962
110-86-1	Pyridine	U	2.88	ug/L	2.88	9.62
94-59-7	Safrole	U	2.88	ug/L	2.88	9.62
3689-24-5	Sulfotep	U	2.88	ug/L	2.88	9.62
297-97-2	Thionazin	U	2.88	ug/L	2.88	9.62
126-73-8	Tributylphosphate	U	2.88	ug/L	2.88	9.62
126-68-1	Triethylphosphorothioate	U	2.88	ug/L	2.88	9.62
122-09-8	a,a-Dimethylphenethylamine	U	5.19	ug/L	5.19	9.62
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	2.88	ug/L	2.88	9.62
111-91-1	bis(2-Chloroethoxy)methane	U	2.88	ug/L	2.88	9.62
111-44-4	bis(2-Chloroethyl) ether	U	2.88	ug/L	2.88	9.62
117-81-7	bis(2-Ethylhexyl)phthalate	U	2.88	ug/L	2.88	9.62

**Semi-Volatile  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941004

<b>Date Collected:</b>	12/11/2017 08:48	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3510C/8270D	<b>SOP Ref:</b>	GL-OA-E-009
<b>Inst:</b>	MSD1.I	<b>Dilution:</b>	1
<b>Analyst:</b>	JMB3	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1040 mL	<b>Final Volume:</b>	1 mL
<b>Column:</b>	25x.20x.33		

**Client ID:** B3FJX1  
**Batch ID:** 1725973  
**Run Date:** 12/18/2017 15:00  
**Prep Date:** 12/14/2017 18:07  
**Data File:** s121817.B\s111811.D

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DPA+NNDPA	diphenylamine+N-nitrosodiphenylamine	U	2.88	ug/L	2.88	9.62
122-39-4	<i>Diphenylamine</i>					
65794-96-9	m,p-Cresols	U	3.56	ug/L	3.56	9.62
99-65-0	m-Dinitrobenzene	U	2.88	ug/L	2.88	9.62
99-09-2	m-Nitroaniline	U	2.88	ug/L	2.88	9.62
95-48-7	o-Cresol	U	2.88	ug/L	2.88	9.62
88-74-4	o-Nitroaniline	U	2.88	ug/L	2.88	9.62
95-53-4	o-Toluidine	U	2.88	ug/L	2.88	9.62
60-11-7	p-(Dimethylamino)azobenzene	U	2.88	ug/L	2.88	9.62
100-01-6	p-Nitroaniline	U	2.88	ug/L	2.88	9.62
106-50-3	p-Phenylenediamine	U	96.2	ug/L	96.2	481

# Quality Control Summary

**GEL LABORATORIES LLC**  
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Report Date: December 20, 2017

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**CH2MHill Plateau Remediation Company**  
**MSIN R3-50 CHPRC**  
**PO Box 1600**  
**Richland, Washington**

Contact: Mr. Scot Fitzgerald

Workorder: 439941

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1725973										
QC1203937915 LCS 1,2,4,5-Tetrachlorobenzene	50.0			29.3	ug/L		59 *	(70%-130%)	LOF	12/17/17	14:11
1,2,4-Trichlorobenzene	50.0			22.9	ug/L		46 *	(70%-130%)			
1,2-Dichlorobenzene	50.0			21.3	ug/L		43 *	(70%-130%)			
1,3-Dichlorobenzene	50.0			20.4	ug/L		41 *	(70%-130%)			
1,4-Dichlorobenzene	50.0			20.0	ug/L		40 *	(70%-130%)			
1,4-Dioxane	50.0			20.2	ug/L		40 *	(70%-130%)			
2,3,4,6-Tetrachlorophenol	50.0			35.1	ug/L		70	(70%-130%)			
2,4,5-Trichlorophenol	50.0			31.3	ug/L		63 *	(70%-130%)			
2,4,6-Trichlorophenol	50.0			31.0	ug/L		62 *	(70%-130%)			
2,4-Dichlorophenol	50.0			28.0	ug/L		56 *	(70%-130%)			
2,4-Dimethylphenol	50.0			22.4	ug/L		45 *	(70%-130%)			
2,4-Dinitrophenol	50.0			32.6	ug/L		65 *	(70%-130%)			
2,4-Dinitrotoluene	50.0			35.9	ug/L		72	(70%-130%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch	1725973									
2,6-Dichlorophenol	50.0		39.8	ug/L		80	(70%-130%)	LOF	12/17/17	14:11
2,6-Dinitrotoluene	50.0		34.1	ug/L		68 *	(70%-130%)			
2-Chloronaphthalene	50.0		24.5	ug/L		49 *	(70%-130%)			
2-Chlorophenol	50.0		26.3	ug/L		53 *	(70%-130%)			
2-Methyl-4,6-dinitrophenol	50.0		35.0	ug/L		70	(70%-130%)			
2-Methylnaphthalene	50.0		23.8	ug/L		48 *	(70%-130%)			
2-Nitrophenol	50.0		29.4	ug/L		59 *	(70%-130%)			
3,3'-Dichlorobenzidine	50.0		37.1	ug/L		74	(70%-130%)			
4-Bromophenylphenylether	50.0		30.8	ug/L		62 *	(70%-130%)			
4-Chloro-3-methylphenol	50.0		31.0	ug/L		62 *	(70%-130%)			
4-Chloroaniline	50.0		36.8	ug/L		74	(70%-130%)			
4-Chlorophenylphenylether	50.0		31.1	ug/L		62 *	(70%-130%)			
4-Nitrophenol	50.0		11.2	ug/L		22 *	(70%-130%)			
Acenaphthene	50.0		29.7	ug/L		59 *	(70%-130%)			
Acenaphthylene	50.0		28.2	ug/L		56 *	(70%-130%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch	1725973									
Acetophenone	50.0		32.2	ug/L		64 *	(70%-130%)	LOF	12/17/17	14:11
Aniline	50.0		27.6	ug/L		55 *	(70%-130%)			
Anthracene	50.0		31.6	ug/L		63 *	(70%-130%)			
Benzo(a)anthracene	50.0		34.2	ug/L		68 *	(70%-130%)			
Benzo(a)pyrene	50.0		32.1	ug/L		64 *	(70%-130%)			
Benzo(b)fluoranthene	50.0		33.5	ug/L		67 *	(70%-130%)			
Benzo(ghi)perylene	50.0		27.5	ug/L		55 *	(70%-130%)			
Benzo(k)fluoranthene	50.0		35.5	ug/L		71	(70%-130%)			
Benzyl alcohol	50.0		23.8	ug/L		48 *	(70%-130%)			
Butylbenzylphthalate	50.0		33.3	ug/L		67 *	(70%-130%)			
Carbazole	50.0		34.2	ug/L		68 *	(70%-130%)			
Chrysene	50.0		33.2	ug/L		66 *	(70%-130%)			
Di-n-butylphthalate	50.0		33.9	ug/L		68 *	(70%-130%)			
Di-n-octylphthalate	50.0		30.6	ug/L		61 *	(70%-130%)			
Dibenzo(a,h)anthracene	50.0		30.5	ug/L		61 *	(70%-130%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch	1725973									
Dibenzofuran	50.0		29.3	ug/L		59 *	(70%-130%)	LOF	12/17/17	14:11
Diethylphthalate	50.0		35.0	ug/L		70	(70%-130%)			
Dimethylphthalate	50.0		34.6	ug/L		69 *	(70%-130%)			
Fluoranthene	50.0		34.3	ug/L		69 *	(70%-130%)			
Fluorene	50.0		30.9	ug/L		62 *	(70%-130%)			
Hexachlorobenzene	50.0		31.2	ug/L		62 *	(70%-130%)			
Hexachlorobutadiene	50.0		21.3	ug/L		43 *	(70%-130%)			
Hexachlorocyclopentadiene	50.0		20.9	ug/L		42 *	(70%-130%)			
Hexachloroethane	50.0		20.1	ug/L		40 *	(70%-130%)			
Indeno(1,2,3-cd)pyrene	50.0		28.3	ug/L		57 *	(70%-130%)			
Isophorone	50.0		28.2	ug/L		56 *	(70%-130%)			
N-Methyl-N-nitrosomethylamine	50.0		15.5	ug/L		31 *	(70%-130%)			
N-Nitrosodipropylamine	50.0		27.1	ug/L		54 *	(70%-130%)			
N-Nitrosopyrrolidine	50.0		32.0	ug/L		64 *	(70%-130%)			
Naphthalene	50.0		23.6	ug/L		47 *	(70%-130%)			

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**QC Summary**

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS										
Batch	1725973									
Nitrobenzene	50.0		27.6	ug/L		55 *	(70%-130%)	LOF	12/17/17	14:11
Pentachlorophenol	50.0		37.8	ug/L		76	(70%-130%)			
Phenanthrene	50.0		32.0	ug/L		64 *	(70%-130%)			
Phenol	50.0		10.7	ug/L		21 *	(70%-130%)			
Pyrene	50.0		31.0	ug/L		62 *	(70%-130%)			
Pyridine	50.0		17.3	ug/L		35 *	(70%-130%)			
Tributylphosphate	50.0		42.2	ug/L		84	(70%-130%)			
bis(2-Chloro-1-methylethyl)ether	50.0		27.7	ug/L		55 *	(70%-130%)			
bis(2-Chloroethoxy)methane	50.0		28.9	ug/L		58 *	(70%-130%)			
bis(2-Chloroethyl) ether	50.0		28.5	ug/L		57 *	(70%-130%)			
bis(2-Ethylhexyl)phthalate	50.0		32.1	ug/L		64 *	(70%-130%)			
diphenylamine+N-nitrosodiphenylamine	50.0		29.9	ug/L		60 *	(70%-130%)			
m,p-Cresols	50.0		24.5	ug/L		49 *	(70%-130%)			
m-Nitroaniline	50.0		42.9	ug/L		86	(70%-130%)			
o-Cresol	50.0		23.9	ug/L		48 *	(70%-130%)			

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**QC Summary**

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS										
Batch	1725973									
o-Nitroaniline	50.0		32.0	ug/L		64*	(70%-130%)	LOF	12/17/17	14:11
p-Nitroaniline	50.0		35.9	ug/L		72	(70%-130%)			
**2,4,6-Tribromophenol	100		71.3	ug/L		71	(32%-124%)			
**2-Fluorobiphenyl	50.0		22.4	ug/L		45	(32%-112%)			
**2-Fluorophenol	100		31.8	ug/L		32	(15%-88%)			
**Nitrobenzene-d5	50.0		27.8	ug/L		56	(36%-115%)			
**Phenol-d5	100		20.4	ug/L		20	(15%-91%)			
**p-Terphenyl-d14	50.0		33.9	ug/L		68	(36%-121%)			
QC1203937918 LCSD 1,2,4,5-Tetrachlorobenzene	50.0		30.7	ug/L	5	61*	(0%-20%)		12/17/17	14:47
1,2,4-Trichlorobenzene	50.0		25.4	ug/L	11	51*	(0%-20%)			
1,2-Dichlorobenzene	50.0		23.2	ug/L	8	46*	(0%-20%)			
1,3-Dichlorobenzene	50.0		23.1	ug/L	12	46*	(0%-20%)			
1,4-Dichlorobenzene	50.0		22.6	ug/L	12	45*	(0%-20%)			
1,4-Dioxane	50.0		22.1	ug/L	9	44*	(0%-20%)			
2,3,4,6-Tetrachlorophenol	50.0		34.8	ug/L	1	70	(0%-20%)			

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**QC Summary**

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch	1725973									
2,4,5-Trichlorophenol	50.0		33.5	ug/L	7	67 *	(0%-20%)	LOF	12/17/17	14:47
2,4,6-Trichlorophenol	50.0		31.2	ug/L	1	62 *	(0%-20%)			
2,4-Dichlorophenol	50.0		31.7	ug/L	12	63 *	(0%-20%)			
2,4-Dimethylphenol	50.0		27.4	ug/L	20	55 *	(0%-20%)			
2,4-Dinitrophenol	50.0		32.9	ug/L	1	66 *	(0%-20%)			
2,4-Dinitrotoluene	50.0		35.0	ug/L	2	70	(0%-20%)			
2,6-Dichlorophenol	50.0		43.3	ug/L	8	87	(0%-20%)			
2,6-Dinitrotoluene	50.0		35.1	ug/L	3	70	(0%-20%)			
2-Chloronaphthalene	50.0		25.5	ug/L	4	51 *	(0%-20%)			
2-Chlorophenol	50.0		28.5	ug/L	8	57 *	(0%-20%)			
2-Methyl-4,6-dinitrophenol	50.0		35.1	ug/L	0	70	(0%-20%)			
2-Methylnaphthalene	50.0		25.0	ug/L	5	50 *	(0%-20%)			
2-Nitrophenol	50.0		29.4	ug/L	0	59 *	(0%-20%)			
3,3'-Dichlorobenzidine	50.0		36.5	ug/L	2	73	(0%-20%)			
4-Bromophenylphenylether	50.0		31.9	ug/L	4	64 *	(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch 1725973										
4-Chloro-3-methylphenol	50.0		32.8	ug/L	6	66 *	(0%-20%)	LOF	12/17/17	14:47
4-Chloroaniline	50.0		38.9	ug/L	6	78	(0%-20%)			
4-Chlorophenylphenylether	50.0		31.9	ug/L	2	64 *	(0%-20%)			
4-Nitrophenol	50.0		10.3	ug/L	9	21 *	(0%-20%)			
Acenaphthene	50.0		30.8	ug/L	4	62 *	(0%-20%)			
Acenaphthylene	50.0		28.9	ug/L	3	58 *	(0%-20%)			
Acetophenone	50.0		33.9	ug/L	5	68 *	(0%-20%)			
Aniline	50.0		29.2	ug/L	6	58 *	(0%-20%)			
Anthracene	50.0		32.6	ug/L	3	65 *	(0%-20%)			
Benzo(a)anthracene	50.0		34.4	ug/L	0	69 *	(0%-20%)			
Benzo(a)pyrene	50.0		33.0	ug/L	3	66 *	(0%-20%)			
Benzo(b)fluoranthene	50.0		33.1	ug/L	1	66 *	(0%-20%)			
Benzo(ghi)perylene	50.0		33.0	ug/L	18	66 *	(0%-20%)			
Benzo(k)fluoranthene	50.0		35.9	ug/L	1	72	(0%-20%)			
Benzyl alcohol	50.0		26.6	ug/L	11	53 *	(0%-20%)			

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**QC Summary**

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS										
Batch	1725973									
Butylbenzylphthalate	50.0		33.4	ug/L	0	67 *	(0%-20%)	LOF	12/17/17	14:47
Carbazole	50.0		33.9	ug/L	1	68 *	(0%-20%)			
Chrysene	50.0		33.4	ug/L	1	67 *	(0%-20%)			
Di-n-butylphthalate	50.0		34.4	ug/L	1	69 *	(0%-20%)			
Di-n-octylphthalate	50.0		30.0	ug/L	2	60 *	(0%-20%)			
Dibenzo(a,h)anthracene	50.0		34.3	ug/L	12	69 *	(0%-20%)			
Dibenzofuran	50.0		30.2	ug/L	3	60 *	(0%-20%)			
Diethylphthalate	50.0		36.3	ug/L	4	73	(0%-20%)			
Dimethylphthalate	50.0		36.7	ug/L	6	73	(0%-20%)			
Fluoranthene	50.0		34.9	ug/L	2	70	(0%-20%)			
Fluorene	50.0		31.0	ug/L	0	62 *	(0%-20%)			
Hexachlorobenzene	50.0		33.2	ug/L	6	66 *	(0%-20%)			
Hexachlorobutadiene	50.0		23.9	ug/L	12	48 *	(0%-20%)			
Hexachlorocyclopentadiene	50.0		19.9	ug/L	5	40 *	(0%-20%)			
Hexachloroethane	50.0		22.0	ug/L	9	44 *	(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch 1725973										
Indeno(1,2,3-cd)pyrene	50.0		33.0	ug/L	15	66 *	(0%-20%)	LOF	12/17/17	14:47
Isophorone	50.0		30.2	ug/L	7	60 *	(0%-20%)			
N-Methyl-N-nitrosomethylamine	50.0		16.8	ug/L	8	34 *	(0%-20%)			
N-Nitrosodipropylamine	50.0		28.2	ug/L	4	56 *	(0%-20%)			
N-Nitrosopyrrolidine	50.0		34.0	ug/L	6	68 *	(0%-20%)			
Naphthalene	50.0		25.5	ug/L	8	51 *	(0%-20%)			
Nitrobenzene	50.0		30.3	ug/L	9	61 *	(0%-20%)			
Pentachlorophenol	50.0		37.8	ug/L	0	76	(0%-20%)			
Phenanthrene	50.0		32.3	ug/L	1	65 *	(0%-20%)			
Phenol	50.0		11.2	ug/L	5	22 *	(0%-20%)			
Pyrene	50.0		31.7	ug/L	2	63 *	(0%-20%)			
Pyridine	50.0		18.9	ug/L	9	38 *	(0%-20%)			
Tributylphosphate	50.0		43.5	ug/L	3	87	(0%-20%)			
bis(2-Chloro-1-methylethyl)ether	50.0		28.9	ug/L	4	58 *	(0%-20%)			
bis(2-Chloroethoxy)methane	50.0		31.6	ug/L	9	63 *	(0%-20%)			

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch	1725973									
bis(2-Chloroethyl) ether	50.0		30.7	ug/L	7	61 *	(0%-20%)	LOF	12/17/17	14:47
bis(2-Ethylhexyl)phthalate	50.0		32.8	ug/L	2	66 *	(0%-20%)			
diphenylamine+N-nitrosodiphenylamine	50.0		30.9	ug/L	3	62 *	(0%-20%)			
m,p-Cresols	50.0		25.5	ug/L	4	51 *	(0%-20%)			
m-Nitroaniline	50.0		42.7	ug/L	0	85	(0%-20%)			
o-Cresol	50.0		24.8	ug/L	4	50 *	(0%-20%)			
o-Nitroaniline	50.0		33.1	ug/L	3	66 *	(0%-20%)			
p-Nitroaniline	50.0		35.2	ug/L	2	70	(0%-20%)			
**2,4,6-Tribromophenol	100		69.8	ug/L		70	(32%-124%)			
**2-Fluorobiphenyl	50.0		23.8	ug/L		48	(32%-112%)			
**2-Fluorophenol	100		33.7	ug/L		34	(15%-88%)			
**Nitrobenzene-d5	50.0		29.0	ug/L		58	(36%-115%)			
**Phenol-d5	100		20.3	ug/L		20	(15%-91%)			
**p-Terphenyl-d14	50.0		33.9	ug/L		68	(36%-121%)			
QC1203937914 MB 1,2,4,5-Tetrachlorobenzene		U	3.00	ug/L				JMB3	12/18/17	12:51

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
1,2,4-Trichlorobenzene			U	3.00	ug/L				JMB3	12/18/17	12:51
1,2-Dichlorobenzene			U	3.00	ug/L						
1,3,5-Trinitrobenzene			U	3.00	ug/L						
1,3-Dichlorobenzene			U	3.00	ug/L						
1,4-Dichlorobenzene			U	3.00	ug/L						
1,4-Dioxane			U	3.00	ug/L						
1,4-Naphthoquinone			U	3.00	ug/L						
1-Naphthylamine			U	3.00	ug/L						
2,3,4,6-Tetrachlorophenol			U	3.00	ug/L						
2,4,5-Trichlorophenol			U	3.00	ug/L						
2,4,6-Trichlorophenol			U	3.00	ug/L						
2,4-Dichlorophenol			U	3.00	ug/L						
2,4-Dimethylphenol			U	3.00	ug/L						
2,4-Dinitrophenol			U	5.00	ug/L						
2,4-Dinitrotoluene			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
2,6-Dichlorophenol			U	3.00	ug/L				JMB3	12/18/17	12:51
2,6-Dinitrotoluene			U	3.00	ug/L						
2-Acetylaminofluorene			U	3.00	ug/L						
2-Chloronaphthalene			U	0.410	ug/L						
2-Chlorophenol			U	3.00	ug/L						
2-Methyl-4,6-dinitrophenol			U	3.00	ug/L						
2-Methylnaphthalene			U	0.300	ug/L						
2-Naphthylamine			U	3.00	ug/L						
2-Nitrophenol			U	3.00	ug/L						
2-Picoline			U	3.00	ug/L						
3,3'-Dichlorobenzidine			U	3.00	ug/L						
3,3'-Dimethylbenzidine			U	3.30	ug/L						
3-Methylcholanthrene			U	3.00	ug/L						
4-Aminobiphenyl			U	3.00	ug/L						
4-Bromophenylphenylether			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
4-Chloro-3-methylphenol			U	3.00	ug/L				JMB3	12/18/17	12:51
4-Chloroaniline			U	3.30	ug/L						
4-Chlorophenylphenylether			U	3.00	ug/L						
4-Nitrophenol			U	3.00	ug/L						
4-Nitroquinoline-1-oxide			U	3.80	ug/L						
5-Nitro-o-toluidine			U	3.00	ug/L						
7,12-Dimethylbenz(a)anthracene			U	3.00	ug/L						
Acenaphthene			U	0.300	ug/L						
Acenaphthylene			U	0.300	ug/L						
Acetophenone			U	3.00	ug/L						
Aniline			U	4.20	ug/L						
Anthracene			U	0.300	ug/L						
Aramite			U	3.70	ug/L						
Benzo(a)anthracene			U	0.300	ug/L						
Benzo(a)pyrene			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
Benzo(b)fluoranthene			U	0.300	ug/L				JMB3	12/18/17	12:51
Benzo(ghi)perylene			U	0.300	ug/L						
Benzo(k)fluoranthene			U	0.300	ug/L						
Benzyl alcohol			U	3.00	ug/L						
Butylbenzylphthalate			U	3.00	ug/L						
Carbazole			U	0.300	ug/L						
Chlorobenzilate			U	3.00	ug/L						
Chrysene			U	0.300	ug/L						
Di-n-butylphthalate			U	3.00	ug/L						
Di-n-octylphthalate			U	3.00	ug/L						
Diallate			U	3.00	ug/L						
Dibenzo(a,h)anthracene			U	0.300	ug/L						
Dibenzofuran			U	3.00	ug/L						
Diethylphthalate			U	3.00	ug/L						
Dimethoate			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
Dimethylphthalate			U	3.00	ug/L				JMB3	12/18/17	12:51
Dinoseb			U	3.00	ug/L						
Disulfoton			U	3.00	ug/L						
Ethyl Methanesulfonate			U	3.00	ug/L						
Famphur			U	5.00	ug/L						
Fluoranthene			U	0.300	ug/L						
Fluorene			U	0.300	ug/L						
Hexachlorobenzene			U	3.00	ug/L						
Hexachlorobutadiene			U	3.00	ug/L						
Hexachlorocyclopentadiene			U	3.00	ug/L						
Hexachloroethane			U	3.00	ug/L						
Hexachlorophene			U	167	ug/L						
Hexachloropropene			U	3.00	ug/L						
Indeno(1,2,3-cd)pyrene			U	0.300	ug/L						
Isodrin			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
Isophorone			U	3.50	ug/L				JMB3	12/18/17	12:51
Isosafrole			U	3.00	ug/L						
Kepone			U	3.00	ug/L						
Methapyrilene			U	3.00	ug/L						
Methyl methanesulfonate			U	3.00	ug/L						
Methyl parathion			U	3.00	ug/L						
N-Methyl-N-nitrosomethylamine			U	3.00	ug/L						
N-Nitrosodi-n-butylamine			U	3.00	ug/L						
N-Nitrosodiethylamine			U	3.00	ug/L						
N-Nitrosodipropylamine			U	3.00	ug/L						
N-Nitrosomethylethylamine			U	3.00	ug/L						
N-Nitrosomorpholine			U	3.00	ug/L						
N-Nitrosopiperidine			U	3.00	ug/L						
N-Nitrosopyrrolidine			U	3.00	ug/L						
Naphthalene			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
Nitrobenzene			U	3.00	ug/L				JMB3	12/18/17	12:51
Parathion			U	3.00	ug/L						
Pentachlorobenzene			U	3.00	ug/L						
Pentachloroethane			U	3.00	ug/L						
Pentachloronitrobenzene			U	3.40	ug/L						
Pentachlorophenol			U	3.00	ug/L						
Phenacetin			U	3.00	ug/L						
Phenanthrene			U	0.300	ug/L						
Phenol			U	3.00	ug/L						
Phorate			U	3.00	ug/L						
Pronamide			U	3.00	ug/L						
Pyrene			U	0.300	ug/L						
Pyridine			U	3.00	ug/L						
Safrole			U	3.00	ug/L						
Sulfotep			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
Thionazin			U	3.00	ug/L				JMB3	12/18/17	12:51
Tributylphosphate			U	3.00	ug/L						
Triethylphosphorothioate			U	3.00	ug/L						
a,a-Dimethylphenethylamine			U	5.40	ug/L						
bis(2-Chloro-1-methylethyl)ether			U	3.00	ug/L						
bis(2-Chloroethoxy)methane			U	3.00	ug/L						
bis(2-Chloroethyl) ether			U	3.00	ug/L						
bis(2-Ethylhexyl)phthalate			U	3.00	ug/L						
diphenylamine+N-nitrosodiphenylamine			U	3.00	ug/L						
m,p-Cresols			U	3.70	ug/L						
m-Dinitrobenzene			U	3.00	ug/L						
m-Nitroaniline			U	3.00	ug/L						
o-Cresol			U	3.00	ug/L						
o-Nitroaniline			U	3.00	ug/L						
o-Toluidine			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1725973										
p-(Dimethylamino)azobenzene				U	3.00	ug/L			JMB3	12/18/17	12:51
p-Nitroaniline				U	3.00	ug/L					
p-Phenylenediamine				U	100	ug/L					
**2,4,6-Tribromophenol	100				70.3	ug/L	70	(32%-124%)			
**2-Fluorobiphenyl	50.0				22.1	ug/L	44	(32%-112%)			
**2-Fluorophenol	100				35.9	ug/L	36	(15%-88%)			
**Nitrobenzene-d5	50.0				31.9	ug/L	64	(36%-115%)			
**Phenol-d5	100				21.5	ug/L	21	(15%-91%)			
**p-Terphenyl-d14	50.0				37.9	ug/L	76	(36%-121%)			
QC1203937921 439941003 MS 1,2,4,5-Tetrachlorobenzene	100	U	2.68		63.6	ug/L	64	(26%-100%)		12/18/17	13:58
1,2,4-Trichlorobenzene	100	U	2.68		52.4	ug/L	52	(28%-93%)			
1,2-Dichlorobenzene	100	U	2.68		52.5	ug/L	53	(28%-94%)			
1,3-Dichlorobenzene	100	U	2.68		52.3	ug/L	52	(28%-89%)			
1,4-Dichlorobenzene	100	U	2.68		51.9	ug/L	52	(25%-95%)			
1,4-Dioxane	100	U	2.68		62.8	ug/L	63	(25%-103%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1725973										
2,3,4,6-Tetrachlorophenol	100	U	2.68	74.9	ug/L		75	(29%-127%)	JMB3	12/18/17	13:58
2,4,5-Trichlorophenol	100	U	2.68	69.6	ug/L		70	(32%-124%)			
2,4,6-Trichlorophenol	100	U	2.68	70.0	ug/L		70	(33%-124%)			
2,4-Dichlorophenol	100	U	2.68	66.8	ug/L		67	(31%-121%)			
2,4-Dimethylphenol	100	U	2.68	53.3	ug/L		53	(28%-112%)			
2,4-Dinitrophenol	100	U	4.46	55.0	ug/L		55	(15%-140%)			
2,4-Dinitrotoluene	100	U	2.68	74.8	ug/L		75	(40%-126%)			
2,6-Dichlorophenol	100	U	2.68	88.8	ug/L		89	(32%-127%)			
2,6-Dinitrotoluene	100	U	2.68	78.6	ug/L		79	(41%-122%)			
2-Chloronaphthalene	100	U	0.366	53.8	ug/L		54	(31%-103%)			
2-Chlorophenol	100	U	2.68	63.1	ug/L		63	(27%-116%)			
2-Methyl-4,6-dinitrophenol	100	U	2.68	66.2	ug/L		66	(15%-142%)			
2-Methylnaphthalene	100	U	0.268	52.6	ug/L		53	(30%-103%)			
2-Nitrophenol	100	U	2.68	64.7	ug/L		65	(35%-121%)			
3,3'-Dichlorobenzidine	100	U	2.68	70.0	ug/L		70	(15%-135%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1725973											
4-Bromophenylphenylether	100	U	2.68	64.4	ug/L		64	(37%-117%)	JMB3	12/18/17	13:58
4-Chloro-3-methylphenol	100	U	2.68	73.6	ug/L		74	(28%-130%)			
4-Chloroaniline	100	U	2.95	75.2	ug/L		75	(23%-158%)			
4-Chlorophenylphenylether	100	U	2.68	67.1	ug/L		67	(38%-116%)			
4-Nitrophenol	100	U	2.68	40.3	ug/L		40	(15%-88%)			
Acenaphthene	100	U	0.268	63.3	ug/L		63	(35%-108%)			
Acenaphthylene	100	U	0.268	59.9	ug/L		60	(34%-113%)			
Acetophenone	100	U	2.68	73.8	ug/L		74	(42%-121%)			
Aniline	100	U	3.75	59.9	ug/L		60	(25%-123%)			
Anthracene	100	U	0.268	62.0	ug/L		62	(37%-112%)			
Benzo(a)anthracene	100	U	0.268	68.6	ug/L		69	(37%-116%)			
Benzo(a)pyrene	100	U	0.268	63.1	ug/L		63	(35%-117%)			
Benzo(b)fluoranthene	100	U	0.268	67.2	ug/L		67	(37%-121%)			
Benzo(ghi)perylene	100	U	0.268	60.1	ug/L		60	(22%-122%)			
Benzo(k)fluoranthene	100	U	0.268	68.6	ug/L		69	(37%-125%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1725973											
Benzyl alcohol	100	U	2.68	63.1	ug/L	63	(38%-120%)	JMB3	12/18/17	13:58	
Butylbenzylphthalate	100	U	2.68	64.6	ug/L	65	(33%-128%)				
Carbazole	100	U	0.268	69.2	ug/L	69	(36%-120%)				
Chrysene	100	U	0.268	66.1	ug/L	66	(36%-116%)				
Di-n-butylphthalate	100	U	2.68	66.9	ug/L	67	(37%-121%)				
Di-n-octylphthalate	100	U	2.68	57.6	ug/L	58	(32%-128%)				
Dibenzo(a,h)anthracene	100	U	0.268	62.0	ug/L	62	(27%-132%)				
Dibenzofuran	100	U	2.68	61.4	ug/L	61	(39%-115%)				
Diethylphthalate	100	U	2.68	77.4	ug/L	77	(39%-124%)				
Dimethylphthalate	100	U	2.68	77.6	ug/L	78	(42%-124%)				
Fluoranthene	100	U	0.268	68.1	ug/L	68	(35%-117%)				
Fluorene	100	U	0.268	65.3	ug/L	65	(36%-113%)				
Hexachlorobenzene	100	U	2.68	64.1	ug/L	64	(36%-116%)				
Hexachlorobutadiene	100	U	2.68	49.6	ug/L	50	(22%-97%)				
Hexachlorocyclopentadiene	100	U	2.68	36.2	ug/L	36	(15%-80%)				

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1725973											
Hexachloroethane	100	U	2.68	51.6	ug/L		52	(23%-93%)	JMB3	12/18/17	13:58
Indeno(1,2,3-cd)pyrene	100	U	0.268	60.6	ug/L		61	(29%-126%)			
Isophorone	100	U	3.13	62.2	ug/L		62	(42%-115%)			
N-Methyl-N-nitrosomethylamine	100	U	2.68	46.6	ug/L		47	(28%-102%)			
N-Nitrosodipropylamine	100	U	2.68	62.5	ug/L		63	(38%-114%)			
N-Nitrosopyrrolidine	100	U	2.68	78.2	ug/L		78	(41%-125%)			
Naphthalene	100	U	0.268	51.5	ug/L		52	(31%-101%)			
Nitrobenzene	100	U	2.68	61.2	ug/L		61	(38%-119%)			
Pentachlorophenol	100	U	2.68	72.3	ug/L		72	(15%-135%)			
Phenanthrene	100	U	0.268	64.7	ug/L		65	(37%-113%)			
Phenol	100	U	2.68	38.6	ug/L		39	(15%-80%)			
Pyrene	100	U	0.268	62.7	ug/L		63	(31%-122%)			
Pyridine	100	U	2.68	47.5	ug/L		47	(15%-93%)			
Tributylphosphate	100	U	2.68	91.4	ug/L		91	(44%-121%)			
bis(2-Chloro-1-methylethyl)ether	100	U	2.68	64.6	ug/L		65	(33%-114%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1725973										
bis(2-Chloroethoxy)methane	100	U	2.68	65.8	ug/L		66	(44%-117%)	JMB3	12/18/17	13:58
bis(2-Chloroethyl) ether	100	U	2.68	65.6	ug/L		66	(39%-113%)			
bis(2-Ethylhexyl)phthalate	100	U	2.68	63.5	ug/L		63	(33%-128%)			
diphenylamine+N-nitrosodiphenylamine	100	U	2.68	63.8	ug/L		64	(35%-108%)			
m,p-Cresols	100	U	3.30	67.1	ug/L		67	(31%-118%)			
m-Nitroaniline	100	U	2.68	92.5	ug/L		93	(26%-162%)			
o-Cresol	100	U	2.68	61.5	ug/L		61	(32%-108%)			
o-Nitroaniline	100	U	2.68	71.9	ug/L		72	(27%-132%)			
p-Nitroaniline	100	U	2.68	69.7	ug/L		70	(15%-153%)			
**2,4,6-Tribromophenol	200		67.1	158	ug/L		79	(32%-124%)			
**2-Fluorobiphenyl	100		25.2	58.2	ug/L		58	(32%-112%)			
**2-Fluorophenol	200		28.5	100	ug/L		50	(15%-88%)			
**Nitrobenzene-d5	100		26.7	62.1	ug/L		62	(36%-115%)			
**Phenol-d5	200		17.2	75.4	ug/L		38	(15%-91%)			
**p-Terphenyl-d14	100		32.3	76.3	ug/L		76	(36%-121%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1725973											
QC1203937922	439941003	MSD									
1,2,4,5-Tetrachlorobenzene	100	U	2.68	66.9	ug/L	5	67	(0%-20%)	JMB3	12/18/17	14:29
1,2,4-Trichlorobenzene	100	U	2.68	53.3	ug/L	2	53	(0%-20%)			
1,2-Dichlorobenzene	100	U	2.68	53.8	ug/L	2	54	(0%-20%)			
1,3-Dichlorobenzene	100	U	2.68	51.6	ug/L	1	52	(0%-20%)			
1,4-Dichlorobenzene	100	U	2.68	53.0	ug/L	2	53	(0%-20%)			
1,4-Dioxane	100	U	2.68	67.6	ug/L	7	68	(0%-20%)			
2,3,4,6-Tetrachlorophenol	100	U	2.68	74.8	ug/L	0	75	(0%-20%)			
2,4,5-Trichlorophenol	100	U	2.68	72.1	ug/L	3	72	(0%-20%)			
2,4,6-Trichlorophenol	100	U	2.68	71.4	ug/L	2	71	(0%-20%)			
2,4-Dichlorophenol	100	U	2.68	69.5	ug/L	4	70	(0%-20%)			
2,4-Dimethylphenol	100	U	2.68	54.7	ug/L	3	55	(0%-20%)			
2,4-Dinitrophenol	100	U	4.46	60.6	ug/L	10	61	(0%-20%)			
2,4-Dinitrotoluene	100	U	2.68	76.4	ug/L	2	76	(0%-20%)			
2,6-Dichlorophenol	100	U	2.68	91.5	ug/L	3	91	(0%-20%)			
2,6-Dinitrotoluene	100	U	2.68	76.9	ug/L	2	77	(0%-20%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1725973											
2-Chloronaphthalene	100	U	0.366	54.4	ug/L	1	54	(0%-20%)	JMB3	12/18/17	14:29
2-Chlorophenol	100	U	2.68	63.2	ug/L	0	63	(0%-20%)			
2-Methyl-4,6-dinitrophenol	100	U	2.68	73.0	ug/L	10	73	(0%-20%)			
2-Methylnaphthalene	100	U	0.268	52.8	ug/L	0	53	(0%-20%)			
2-Nitrophenol	100	U	2.68	69.3	ug/L	7	69	(0%-20%)			
3,3'-Dichlorobenzidine	100	U	2.68	70.3	ug/L	0	70	(0%-20%)			
4-Bromophenylphenylether	100	U	2.68	68.1	ug/L	5	68	(0%-20%)			
4-Chloro-3-methylphenol	100	U	2.68	74.2	ug/L	1	74	(0%-20%)			
4-Chloroaniline	100	U	2.95	77.1	ug/L	2	77	(0%-20%)			
4-Chlorophenylphenylether	100	U	2.68	68.8	ug/L	3	69	(0%-20%)			
4-Nitrophenol	100	U	2.68	39.6	ug/L	2	40	(0%-20%)			
Acenaphthene	100	U	0.268	66.0	ug/L	4	66	(0%-20%)			
Acenaphthylene	100	U	0.268	62.2	ug/L	4	62	(0%-20%)			
Acetophenone	100	U	2.68	75.9	ug/L	3	76	(0%-20%)			
Aniline	100	U	3.75	60.9	ug/L	2	61	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1725973										
Anthracene	100	U	0.268	64.2	ug/L	3	64	(0%-20%)	JMB3	12/18/17	14:29
Benzo(a)anthracene	100	U	0.268	66.7	ug/L	3	67	(0%-20%)			
Benzo(a)pyrene	100	U	0.268	61.3	ug/L	3	61	(0%-20%)			
Benzo(b)fluoranthene	100	U	0.268	63.2	ug/L	6	63	(0%-20%)			
Benzo(ghi)perylene	100	U	0.268	67.7	ug/L	12	68	(0%-20%)			
Benzo(k)fluoranthene	100	U	0.268	67.6	ug/L	1	68	(0%-20%)			
Benzyl alcohol	100	U	2.68	64.0	ug/L	1	64	(0%-20%)			
Butylbenzylphthalate	100	U	2.68	65.8	ug/L	2	66	(0%-20%)			
Carbazole	100	U	0.268	67.2	ug/L	3	67	(0%-20%)			
Chrysene	100	U	0.268	63.9	ug/L	3	64	(0%-20%)			
Di-n-butylphthalate	100	U	2.68	65.7	ug/L	2	66	(0%-20%)			
Di-n-octylphthalate	100	U	2.68	57.7	ug/L	0	58	(0%-20%)			
Dibenzo(a,h)anthracene	100	U	0.268	70.9	ug/L	13	71	(0%-20%)			
Dibenzofuran	100	U	2.68	64.4	ug/L	5	64	(0%-20%)			
Diethylphthalate	100	U	2.68	78.8	ug/L	2	79	(0%-20%)			

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<b>Semi-Volatile-GC/MS</b>											
Batch 1725973											
Dimethylphthalate	100	U	2.68	78.7	ug/L	1	79	(0%-20%)	JMB3	12/18/17	14:29
Fluoranthene	100	U	0.268	66.4	ug/L	3	66	(0%-20%)			
Fluorene	100	U	0.268	65.1	ug/L	0	65	(0%-20%)			
Hexachlorobenzene	100	U	2.68	66.9	ug/L	4	67	(0%-20%)			
Hexachlorobutadiene	100	U	2.68	50.6	ug/L	2	51	(0%-20%)			
Hexachlorocyclopentadiene	100	U	2.68	36.1	ug/L	0	36	(0%-20%)			
Hexachloroethane	100	U	2.68	47.4	ug/L	9	47	(0%-20%)			
Indeno(1,2,3-cd)pyrene	100	U	0.268	66.4	ug/L	9	66	(0%-20%)			
Isophorone	100	U	3.13	64.7	ug/L	4	65	(0%-20%)			
N-Methyl-N-nitrosomethylamine	100	U	2.68	48.4	ug/L	4	48	(0%-20%)			
N-Nitrosodipropylamine	100	U	2.68	62.2	ug/L	1	62	(0%-20%)			
N-Nitrosopyrrolidine	100	U	2.68	76.1	ug/L	3	76	(0%-20%)			
Naphthalene	100	U	0.268	55.5	ug/L	7	56	(0%-20%)			
Nitrobenzene	100	U	2.68	66.3	ug/L	8	66	(0%-20%)			
Pentachlorophenol	100	U	2.68	74.9	ug/L	4	75	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1725973										
Phenanthrene	100	U	0.268	64.3	ug/L	1	64	(0%-20%)	JMB3	12/18/17	14:29
Phenol	100	U	2.68	40.0	ug/L	4	40	(0%-20%)			
Pyrene	100	U	0.268	64.6	ug/L	3	65	(0%-20%)			
Pyridine	100	U	2.68	48.4	ug/L	2	48	(0%-20%)			
Tributylphosphate	100	U	2.68	90.1	ug/L	1	90	(0%-20%)			
bis(2-Chloro-1-methylethyl)ether	100	U	2.68	64.5	ug/L	0	65	(0%-20%)			
bis(2-Chloroethoxy)methane	100	U	2.68	66.7	ug/L	1	67	(0%-20%)			
bis(2-Chloroethyl) ether	100	U	2.68	68.2	ug/L	4	68	(0%-20%)			
bis(2-Ethylhexyl)phthalate	100	U	2.68	63.6	ug/L	0	64	(0%-20%)			
diphenylamine+N-nitrosodiphenylamine	100	U	2.68	64.6	ug/L	1	65	(0%-20%)			
m,p-Cresols	100	U	3.30	67.0	ug/L	0	67	(0%-20%)			
m-Nitroaniline	100	U	2.68	89.3	ug/L	4	89	(0%-20%)			
o-Cresol	100	U	2.68	62.1	ug/L	1	62	(0%-20%)			
o-Nitroaniline	100	U	2.68	69.6	ug/L	3	70	(0%-20%)			
p-Nitroaniline	100	U	2.68	73.2	ug/L	5	73	(0%-20%)			

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Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch 1725973										
**2,4,6-Tribromophenol	200	67.1	153	ug/L		76	(32%-124%)	JMB3	12/18/17	14:29
**2-Fluorobiphenyl	100	25.2	61.3	ug/L		61	(32%-112%)			
**2-Fluorophenol	200	28.5	103	ug/L		51	(15%-88%)			
**Nitrobenzene-d5	100	26.7	65.1	ug/L		65	(36%-115%)			
**Phenol-d5	200	17.2	75.4	ug/L		38	(15%-91%)			
**p-Terphenyl-d14	100	32.3	80.2	ug/L		80	(36%-121%)			
<hr/>										
Batch 1726826										
QC1203940035 LCS 1,2,4,5-Tetrachlorobenzene	50.0		33.7	ug/L		67*	(70%-130%)	JMB3	12/18/17	19:13
1,2,4-Trichlorobenzene	50.0		27.8	ug/L		56*	(70%-130%)			
1,2-Dichlorobenzene	50.0		26.4	ug/L		53*	(70%-130%)			
1,3-Dichlorobenzene	50.0		26.0	ug/L		52*	(70%-130%)			
1,4-Dichlorobenzene	50.0		24.9	ug/L		50*	(70%-130%)			
1,4-Dioxane	50.0		23.7	ug/L		47*	(70%-130%)			
2,3,4,6-Tetrachlorophenol	50.0		31.5	ug/L		63*	(70%-130%)			
2,4,5-Trichlorophenol	50.0		29.9	ug/L		60*	(70%-130%)			
2,4,6-Trichlorophenol	50.0		30.9	ug/L		62*	(70%-130%)			

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch	1726826									
2,4-Dichlorophenol	50.0		30.8	ug/L		62 *	(70%-130%)	JMB3	12/18/17	19:13
2,4-Dimethylphenol	50.0		25.9	ug/L		52 *	(70%-130%)			
2,4-Dinitrophenol	50.0		26.6	ug/L		53 *	(70%-130%)			
2,4-Dinitrotoluene	50.0		32.6	ug/L		65 *	(70%-130%)			
2,6-Dichlorophenol	50.0		43.7	ug/L		87	(70%-130%)			
2,6-Dinitrotoluene	50.0		33.1	ug/L		66 *	(70%-130%)			
2-Chloronaphthalene	50.0		26.9	ug/L		54 *	(70%-130%)			
2-Chlorophenol	50.0		29.2	ug/L		58 *	(70%-130%)			
2-Methyl-4,6-dinitrophenol	50.0		28.1	ug/L		56 *	(70%-130%)			
2-Methylnaphthalene	50.0		26.1	ug/L		52 *	(70%-130%)			
2-Nitrophenol	50.0		30.3	ug/L		61 *	(70%-130%)			
3,3'-Dichlorobenzidine	50.0		33.5	ug/L		67 *	(70%-130%)			
4-Bromophenylphenylether	50.0		30.0	ug/L		60 *	(70%-130%)			
4-Chloro-3-methylphenol	50.0		31.8	ug/L		64 *	(70%-130%)			
4-Chloroaniline	50.0		39.2	ug/L		78	(70%-130%)			

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch	1726826									
4-Chlorophenylphenylether	50.0		31.4	ug/L		63 *	(70%-130%)	JMB3	12/18/17	19:13
4-Nitrophenol	50.0	J	9.97	ug/L		20 *	(70%-130%)			
Acenaphthene	50.0		31.0	ug/L		62 *	(70%-130%)			
Acenaphthylene	50.0		29.5	ug/L		59 *	(70%-130%)			
Acetophenone	50.0		35.7	ug/L		71	(70%-130%)			
Aniline	50.0		31.1	ug/L		62 *	(70%-130%)			
Anthracene	50.0		30.2	ug/L		60 *	(70%-130%)			
Benzo(a)anthracene	50.0		31.6	ug/L		63 *	(70%-130%)			
Benzo(a)pyrene	50.0		29.8	ug/L		60 *	(70%-130%)			
Benzo(b)fluoranthene	50.0		31.2	ug/L		62 *	(70%-130%)			
Benzo(ghi)perylene	50.0		28.4	ug/L		57 *	(70%-130%)			
Benzo(k)fluoranthene	50.0		32.9	ug/L		66 *	(70%-130%)			
Benzyl alcohol	50.0		26.0	ug/L		52 *	(70%-130%)			
Butylbenzylphthalate	50.0		28.9	ug/L		58 *	(70%-130%)			
Carbazole	50.0		31.7	ug/L		63 *	(70%-130%)			

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch	1726826									
Chrysene	50.0		30.4	ug/L		61 *	(70%-130%)	JMB3	12/18/17	19:13
Di-n-butylphthalate	50.0		31.3	ug/L		63 *	(70%-130%)			
Di-n-octylphthalate	50.0		27.4	ug/L		55 *	(70%-130%)			
Dibenzo(a,h)anthracene	50.0		30.4	ug/L		61 *	(70%-130%)			
Dibenzofuran	50.0		30.3	ug/L		61 *	(70%-130%)			
Diethylphthalate	50.0		33.4	ug/L		67 *	(70%-130%)			
Dimethylphthalate	50.0		33.0	ug/L		66 *	(70%-130%)			
Fluoranthene	50.0		33.1	ug/L		66 *	(70%-130%)			
Fluorene	50.0		30.8	ug/L		62 *	(70%-130%)			
Hexachlorobenzene	50.0		31.5	ug/L		63 *	(70%-130%)			
Hexachlorobutadiene	50.0		26.7	ug/L		53 *	(70%-130%)			
Hexachlorocyclopentadiene	50.0		18.3	ug/L		37 *	(70%-130%)			
Hexachloroethane	50.0		25.8	ug/L		52 *	(70%-130%)			
Indeno(1,2,3-cd)pyrene	50.0		28.7	ug/L		57 *	(70%-130%)			
Isophorone	50.0		28.6	ug/L		57 *	(70%-130%)			

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>										
Batch 1726826										
N-Methyl-N-nitrosomethylamine	50.0		17.4	ug/L		35 *	(70%-130%)	JMB3	12/18/17	19:13
N-Nitrosodipropylamine	50.0		28.4	ug/L		57 *	(70%-130%)			
N-Nitrosopyrrolidine	50.0		34.6	ug/L		69 *	(70%-130%)			
Naphthalene	50.0		26.8	ug/L		54 *	(70%-130%)			
Nitrobenzene	50.0		30.5	ug/L		61 *	(70%-130%)			
Pentachlorophenol	50.0		32.4	ug/L		65 *	(70%-130%)			
Phenanthrene	50.0		30.8	ug/L		62 *	(70%-130%)			
Phenol	50.0		11.4	ug/L		23 *	(70%-130%)			
Pyrene	50.0		27.7	ug/L		55 *	(70%-130%)			
Pyridine	50.0		20.4	ug/L		41 *	(70%-130%)			
Tributylphosphate	50.0		40.2	ug/L		80	(70%-130%)			
bis(2-Chloro-1-methylethyl)ether	50.0		30.4	ug/L		61 *	(70%-130%)			
bis(2-Chloroethoxy)methane	50.0		29.7	ug/L		59 *	(70%-130%)			
bis(2-Chloroethyl) ether	50.0		30.6	ug/L		61 *	(70%-130%)			
bis(2-Ethylhexyl)phthalate	50.0		28.8	ug/L		58 *	(70%-130%)			

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS										
Batch	1726826									
diphenylamine+N-nitrosodiphenylamine	50.0		28.6	ug/L		57 *	(70%-130%)	JMB3	12/18/17	19:13
m,p-Cresols	50.0		25.5	ug/L		51 *	(70%-130%)			
m-Nitroaniline	50.0		40.4	ug/L		81	(70%-130%)			
o-Cresol	50.0		24.8	ug/L		50 *	(70%-130%)			
o-Nitroaniline	50.0		30.1	ug/L		60 *	(70%-130%)			
p-Nitroaniline	50.0		33.9	ug/L		68 *	(70%-130%)			
**2,4,6-Tribromophenol	100		67.8	ug/L		68	(32%-124%)			
**2-Fluorobiphenyl	50.0		27.5	ug/L		55	(32%-112%)			
**2-Fluorophenol	100		35.0	ug/L		35	(15%-88%)			
**Nitrobenzene-d5	50.0		30.4	ug/L		61	(36%-115%)			
**Phenol-d5	100		20.1	ug/L		20	(15%-91%)			
**p-Terphenyl-d14	50.0		29.5	ug/L		59	(36%-121%)			
QC1203940034 MB 1,2,4,5-Tetrachlorobenzene		U	3.00	ug/L					12/18/17	18:42
1,2,4-Trichlorobenzene		U	3.00	ug/L						
1,2-Dichlorobenzene		U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1726826										
1,3,5-Trinitrobenzene			U	3.00	ug/L				JMB3	12/18/17	18:42
1,3-Dichlorobenzene			U	3.00	ug/L						
1,4-Dichlorobenzene			U	3.00	ug/L						
1,4-Dioxane			U	3.00	ug/L						
1,4-Naphthoquinone			U	3.00	ug/L						
1-Naphthylamine			U	3.00	ug/L						
2,3,4,6-Tetrachlorophenol			U	3.00	ug/L						
2,4,5-Trichlorophenol			U	3.00	ug/L						
2,4,6-Trichlorophenol			U	3.00	ug/L						
2,4-Dichlorophenol			U	3.00	ug/L						
2,4-Dimethylphenol			U	3.00	ug/L						
2,4-Dinitrophenol			U	5.00	ug/L						
2,4-Dinitrotoluene			U	3.00	ug/L						
2,6-Dichlorophenol			U	3.00	ug/L						
2,6-Dinitrotoluene			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1726826										
2-Acetylaminofluorene			U	3.00	ug/L				JMB3	12/18/17	18:42
2-Chloronaphthalene			U	0.410	ug/L						
2-Chlorophenol			U	3.00	ug/L						
2-Methyl-4,6-dinitrophenol			U	3.00	ug/L						
2-Methylnaphthalene			U	0.300	ug/L						
2-Naphthylamine			U	3.00	ug/L						
2-Nitrophenol			U	3.00	ug/L						
2-Picoline			U	3.00	ug/L						
3,3'-Dichlorobenzidine			U	3.00	ug/L						
3,3'-Dimethylbenzidine			U	3.30	ug/L						
3-Methylcholanthrene			U	3.00	ug/L						
4-Aminobiphenyl			U	3.00	ug/L						
4-Bromophenylphenylether			U	3.00	ug/L						
4-Chloro-3-methylphenol			U	3.00	ug/L						
4-Chloroaniline			U	3.30	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
4-Chlorophenylphenylether			U	3.00	ug/L				JMB3	12/18/17	18:42
4-Nitrophenol			U	3.00	ug/L						
4-Nitroquinoline-1-oxide			U	3.80	ug/L						
5-Nitro-o-toluidine			U	3.00	ug/L						
7,12-Dimethylbenz(a)anthracene			U	3.00	ug/L						
Acenaphthene			U	0.300	ug/L						
Acenaphthylene			U	0.300	ug/L						
Acetophenone			U	3.00	ug/L						
Aniline			U	4.20	ug/L						
Anthracene			U	0.300	ug/L						
Aramite			U	3.70	ug/L						
Benzo(a)anthracene			U	0.300	ug/L						
Benzo(a)pyrene			U	0.300	ug/L						
Benzo(b)fluoranthene			U	0.300	ug/L						
Benzo(ghi)perylene			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1726826										
Benzo(k)fluoranthene			U	0.300	ug/L				JMB3	12/18/17	18:42
Benzyl alcohol			U	3.00	ug/L						
Butylbenzylphthalate			U	3.00	ug/L						
Carbazole			U	0.300	ug/L						
Chlorobenzilate			U	3.00	ug/L						
Chrysene			U	0.300	ug/L						
Di-n-butylphthalate			U	3.00	ug/L						
Di-n-octylphthalate			U	3.00	ug/L						
Diallate			U	3.00	ug/L						
Dibenzo(a,h)anthracene			U	0.300	ug/L						
Dibenzofuran			U	3.00	ug/L						
Diethylphthalate			U	3.00	ug/L						
Dimethoate			U	3.00	ug/L						
Dimethylphthalate			U	3.00	ug/L						
Dinoseb			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1726826										
Disulfoton			U	3.00	ug/L				JMB3	12/18/17	18:42
Ethyl Methanesulfonate			U	3.00	ug/L						
Famphur			U	5.00	ug/L						
Fluoranthene			U	0.300	ug/L						
Fluorene			U	0.300	ug/L						
Hexachlorobenzene			U	3.00	ug/L						
Hexachlorobutadiene			U	3.00	ug/L						
Hexachlorocyclopentadiene			U	3.00	ug/L						
Hexachloroethane			U	3.00	ug/L						
Hexachlorophene			U	167	ug/L						
Hexachloropropene			U	3.00	ug/L						
Indeno(1,2,3-cd)pyrene			U	0.300	ug/L						
Isodrin			U	3.00	ug/L						
Isophorone			U	3.50	ug/L						
Isosafrole			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1726826										
Kepone			U	3.00	ug/L				JMB3	12/18/17	18:42
Methapyriline			U	3.00	ug/L						
Methyl methanesulfonate			U	3.00	ug/L						
Methyl parathion			U	3.00	ug/L						
N-Methyl-N-nitrosomethylamine			U	3.00	ug/L						
N-Nitrosodi-n-butylamine			U	3.00	ug/L						
N-Nitrosodiethylamine			U	3.00	ug/L						
N-Nitrosodipropylamine			U	3.00	ug/L						
N-Nitrosomethylethylamine			U	3.00	ug/L						
N-Nitrosomorpholine			U	3.00	ug/L						
N-Nitrosopiperidine			U	3.00	ug/L						
N-Nitrosopyrrolidine			U	3.00	ug/L						
Naphthalene			U	0.300	ug/L						
Nitrobenzene			U	3.00	ug/L						
Parathion			U	3.00	ug/L						

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Parlname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
Pentachlorobenzene			U	3.00	ug/L				JMB3	12/18/17	18:42
Pentachloroethane			U	3.00	ug/L						
Pentachloronitrobenzene			U	3.40	ug/L						
Pentachlorophenol			U	3.00	ug/L						
Phenacetin			U	3.00	ug/L						
Phenanthrene			U	0.300	ug/L						
Phenol			U	3.00	ug/L						
Phorate			U	3.00	ug/L						
Pronamide			U	3.00	ug/L						
Pyrene			U	0.300	ug/L						
Pyridine			U	3.00	ug/L						
Safrole			U	3.00	ug/L						
Sulfotep			U	3.00	ug/L						
Thionazin			U	3.00	ug/L						
Tributylphosphate			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1726826										
Triethylphosphorothioate			U	3.00	ug/L				JMB3	12/18/17	18:42
a,a-Dimethylphenethylamine			U	5.40	ug/L						
bis(2-Chloro-1-methylethyl)ether			U	3.00	ug/L						
bis(2-Chloroethoxy)methane			U	3.00	ug/L						
bis(2-Chloroethyl) ether			U	3.00	ug/L						
bis(2-Ethylhexyl)phthalate			U	3.00	ug/L						
diphenylamine+N-nitrosodiphenylamine			U	3.00	ug/L						
m,p-Cresols			U	3.70	ug/L						
m-Dinitrobenzene			U	3.00	ug/L						
m-Nitroaniline			U	3.00	ug/L						
o-Cresol			U	3.00	ug/L						
o-Nitroaniline			U	3.00	ug/L						
o-Toluidine			U	3.00	ug/L						
p-(Dimethylamino)azobenzene			U	3.00	ug/L						
p-Nitroaniline			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1726826										
p-Phenylenediamine				U	ug/L				JMB3	12/18/17	18:42
**2,4,6-Tribromophenol	100			63.0	ug/L	63	(32%-124%)				
**2-Fluorobiphenyl	50.0			25.1	ug/L	50	(32%-112%)				
**2-Fluorophenol	100			30.2	ug/L	30	(15%-88%)				
**Nitrobenzene-d5	50.0			29.0	ug/L	58	(36%-115%)				
**Phenol-d5	100			20.2	ug/L	20	(15%-91%)				
**p-Terphenyl-d14	50.0			31.0	ug/L	62	(36%-121%)				
QC1203940053 439941002 MS 1,2,4,5-Tetrachlorobenzene	100	U	2.73	66.8	ug/L	67	(26%-100%)			12/18/17	20:15
1,2,4-Trichlorobenzene	100	U	2.73	48.4	ug/L	48	(28%-93%)				
1,2-Dichlorobenzene	100	U	2.73	48.4	ug/L	48	(28%-94%)				
1,3-Dichlorobenzene	100	U	2.73	48.4	ug/L	48	(28%-89%)				
1,4-Dichlorobenzene	100	U	2.73	45.1	ug/L	45	(25%-95%)				
1,4-Dioxane	100	U	2.73	57.0	ug/L	57	(25%-103%)				
2,3,4,6-Tetrachlorophenol	100	U	2.73	66.9	ug/L	67	(29%-127%)				
2,4,5-Trichlorophenol	100	U	2.73	64.1	ug/L	64	(32%-124%)				

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
2,4,6-Trichlorophenol	100	U	2.73	60.9	ug/L		61	(33%-124%)	JMB3	12/18/17	20:15
2,4-Dichlorophenol	100	U	2.73	60.1	ug/L		60	(31%-121%)			
2,4-Dimethylphenol	100	U	2.73	50.2	ug/L		50	(28%-112%)			
2,4-Dinitrophenol	100	U	4.55	54.9	ug/L		55	(15%-140%)			
2,4-Dinitrotoluene	100	U	2.73	66.0	ug/L		66	(40%-126%)			
2,6-Dichlorophenol	100	U	2.73	85.9	ug/L		86	(32%-127%)			
2,6-Dinitrotoluene	100	U	2.73	68.4	ug/L		68	(41%-122%)			
2-Chloronaphthalene	100	U	0.373	53.9	ug/L		54	(31%-103%)			
2-Chlorophenol	100	U	2.73	58.6	ug/L		59	(27%-116%)			
2-Methyl-4,6-dinitrophenol	100	U	2.73	61.9	ug/L		62	(15%-142%)			
2-Methylnaphthalene	100	U	0.273	50.5	ug/L		51	(30%-103%)			
2-Nitrophenol	100	U	2.73	59.6	ug/L		60	(35%-121%)			
3,3'-Dichlorobenzidine	100	U	2.73	66.9	ug/L		67	(15%-135%)			
4-Bromophenylphenylether	100	U	2.73	68.3	ug/L		68	(37%-117%)			
4-Chloro-3-methylphenol	100	U	2.73	61.2	ug/L		61	(28%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1726826											
4-Chloroaniline	100	U	3.00	74.1	ug/L	74	(23%-158%)	JMB3	12/18/17	20:15	
4-Chlorophenylphenylether	100	U	2.73	65.7	ug/L	66	(38%-116%)				
4-Nitrophenol	100	U	2.73	28.1	ug/L	28	(15%-88%)				
Acenaphthene	100	U	0.273	63.1	ug/L	63	(35%-108%)				
Acenaphthylene	100	U	0.273	58.9	ug/L	59	(34%-113%)				
Acetophenone	100	U	2.73	68.3	ug/L	68	(42%-121%)				
Aniline	100	U	3.82	55.7	ug/L	56	(25%-123%)				
Anthracene	100	U	0.273	64.1	ug/L	64	(37%-112%)				
Benzo(a)anthracene	100	U	0.273	66.1	ug/L	66	(37%-116%)				
Benzo(a)pyrene	100	U	0.273	65.0	ug/L	65	(35%-117%)				
Benzo(b)fluoranthene	100	U	0.273	63.3	ug/L	63	(37%-121%)				
Benzo(ghi)perylene	100	U	0.273	61.4	ug/L	61	(22%-122%)				
Benzo(k)fluoranthene	100	U	0.273	66.7	ug/L	67	(37%-125%)				
Benzyl alcohol	100	U	2.73	57.0	ug/L	57	(38%-120%)				
Butylbenzylphthalate	100	U	2.73	64.7	ug/L	65	(33%-128%)				

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
Carbazole	100	U	0.273	64.6	ug/L		65	(36%-120%)	JMB3	12/18/17	20:15
Chrysene	100	U	0.273	64.7	ug/L		65	(36%-116%)			
Di-n-butylphthalate	100	U	2.73	65.2	ug/L		65	(37%-121%)			
Di-n-octylphthalate	100	U	2.73	57.7	ug/L		58	(32%-128%)			
Dibenzo(a,h)anthracene	100	U	0.273	64.3	ug/L		64	(27%-132%)			
Dibenzofuran	100	U	2.73	61.8	ug/L		62	(39%-115%)			
Diethylphthalate	100	U	2.73	67.4	ug/L		67	(39%-124%)			
Dimethylphthalate	100	U	2.73	69.0	ug/L		69	(42%-124%)			
Fluoranthene	100	U	0.273	66.7	ug/L		67	(35%-117%)			
Fluorene	100	U	0.273	63.1	ug/L		63	(36%-113%)			
Hexachlorobenzene	100	U	2.73	64.8	ug/L		65	(36%-116%)			
Hexachlorobutadiene	100	U	2.73	46.6	ug/L		47	(22%-97%)			
Hexachlorocyclopentadiene	100	U	2.73	38.8	ug/L		39	(15%-80%)			
Hexachloroethane	100	U	2.73	46.9	ug/L		47	(23%-93%)			
Indeno(1,2,3-cd)pyrene	100	U	0.273	62.5	ug/L		63	(29%-126%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1726826											
Isophorone	100	U	3.18	56.9	ug/L		57	(42%-115%)	JMB3	12/18/17	20:15
N-Methyl-N-nitrosomethylamine	100	U	2.73	42.7	ug/L		43	(28%-102%)			
N-Nitrosodipropylamine	100	U	2.73	57.0	ug/L		57	(38%-114%)			
N-Nitrosopyrrolidine	100	U	2.73	67.8	ug/L		68	(41%-125%)			
Naphthalene	100	U	0.273	51.0	ug/L		51	(31%-101%)			
Nitrobenzene	100	U	2.73	60.1	ug/L		60	(38%-119%)			
Pentachlorophenol	100	U	2.73	68.3	ug/L		68	(15%-135%)			
Phenanthrene	100	U	0.273	64.9	ug/L		65	(37%-113%)			
Phenol	100	U	2.73	34.2	ug/L		34	(15%-80%)			
Pyrene	100	U	0.273	63.9	ug/L		64	(31%-122%)			
Pyridine	100	U	2.73	43.6	ug/L		44	(15%-93%)			
Tributylphosphate	100	U	2.73	81.5	ug/L		82	(44%-121%)			
bis(2-Chloro-1-methylethyl)ether	100	U	2.73	58.0	ug/L		58	(33%-114%)			
bis(2-Chloroethoxy)methane	100	U	2.73	59.4	ug/L		59	(44%-117%)			
bis(2-Chloroethyl) ether	100	U	2.73	60.4	ug/L		60	(39%-113%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
bis(2-Ethylhexyl)phthalate	100	U	2.73	61.9	ug/L		61	(33%-128%)	JMB3	12/18/17	20:15
diphenylamine+N-nitrosodiphenylamine	100	U	2.73	60.9	ug/L		61	(35%-108%)			
m,p-Cresols	100	U	3.36	57.9	ug/L		58	(31%-118%)			
m-Nitroaniline	100	U	2.73	80.0	ug/L		80	(26%-162%)			
o-Cresol	100	U	2.73	54.4	ug/L		54	(32%-108%)			
o-Nitroaniline	100	U	2.73	62.3	ug/L		62	(27%-132%)			
p-Nitroaniline	100	U	2.73	63.0	ug/L		63	(15%-153%)			
**2,4,6-Tribromophenol	200		55.8	135	ug/L		68	(32%-124%)			
**2-Fluorobiphenyl	100		26.4	55.2	ug/L		55	(32%-112%)			
**2-Fluorophenol	200		22.2	89.1	ug/L		45	(15%-88%)			
**Nitrobenzene-d5	100		26.0	58.9	ug/L		59	(36%-115%)			
**Phenol-d5	200		13.7	65.2	ug/L		33	(15%-91%)			
**p-Terphenyl-d14	100		29.5	72.3	ug/L		72	(36%-121%)			
QC1203940054 439941002 MSD 1,2,4,5-Tetrachlorobenzene	100	U	2.73	71.3	ug/L	7	71	(0%-20%)		12/18/17	20:46
1,2,4-Trichlorobenzene	100	U	2.73	55.0	ug/L	13	55	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
1,2-Dichlorobenzene	100	U	2.73	55.5	ug/L	14	55	(0%-20%)	JMB3	12/18/17	20:46
1,3-Dichlorobenzene	100	U	2.73	54.3	ug/L	11	54	(0%-20%)			
1,4-Dichlorobenzene	100	U	2.73	53.5	ug/L	17	54	(0%-20%)			
1,4-Dioxane	100	U	2.73	65.1	ug/L	13	65	(0%-20%)			
2,3,4,6-Tetrachlorophenol	100	U	2.73	72.5	ug/L	8	72	(0%-20%)			
2,4,5-Trichlorophenol	100	U	2.73	64.7	ug/L	1	65	(0%-20%)			
2,4,6-Trichlorophenol	100	U	2.73	64.0	ug/L	5	64	(0%-20%)			
2,4-Dichlorophenol	100	U	2.73	67.3	ug/L	11	67	(0%-20%)			
2,4-Dimethylphenol	100	U	2.73	56.5	ug/L	12	57	(0%-20%)			
2,4-Dinitrophenol	100	U	4.55	62.0	ug/L	12	62	(0%-20%)			
2,4-Dinitrotoluene	100	U	2.73	69.6	ug/L	5	70	(0%-20%)			
2,6-Dichlorophenol	100	U	2.73	92.4	ug/L	7	92	(0%-20%)			
2,6-Dinitrotoluene	100	U	2.73	71.5	ug/L	4	71	(0%-20%)			
2-Chloronaphthalene	100	U	0.373	57.2	ug/L	6	57	(0%-20%)			
2-Chlorophenol	100	U	2.73	65.2	ug/L	11	65	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1726826											
2-Methyl-4,6-dinitrophenol	100	U	2.73	66.8	ug/L	8	67	(0%-20%)	JMB3	12/18/17	20:46
2-Methylnaphthalene	100	U	0.273	56.6	ug/L	11	57	(0%-20%)			
2-Nitrophenol	100	U	2.73	64.5	ug/L	8	65	(0%-20%)			
3,3'-Dichlorobenzidine	100	U	2.73	71.9	ug/L	7	72	(0%-20%)			
4-Bromophenylphenylether	100	U	2.73	69.6	ug/L	2	70	(0%-20%)			
4-Chloro-3-methylphenol	100	U	2.73	69.2	ug/L	12	69	(0%-20%)			
4-Chloroaniline	100	U	3.00	78.4	ug/L	6	78	(0%-20%)			
4-Chlorophenylphenylether	100	U	2.73	70.9	ug/L	8	71	(0%-20%)			
4-Nitrophenol	100	U	2.73	31.5	ug/L	11	31	(0%-20%)			
Acenaphthene	100	U	0.273	67.7	ug/L	7	68	(0%-20%)			
Acenaphthylene	100	U	0.273	63.7	ug/L	8	64	(0%-20%)			
Acetophenone	100	U	2.73	74.7	ug/L	9	75	(0%-20%)			
Aniline	100	U	3.82	63.0	ug/L	12	63	(0%-20%)			
Anthracene	100	U	0.273	64.4	ug/L	0	64	(0%-20%)			
Benzo(a)anthracene	100	U	0.273	67.7	ug/L	2	68	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch 1726826											
Benzo(a)pyrene	100	U	0.273	65.9	ug/L	1	66	(0%-20%)	JMB3	12/18/17	20:46
Benzo(b)fluoranthene	100	U	0.273	65.6	ug/L	4	66	(0%-20%)			
Benzo(ghi)perylene	100	U	0.273	68.0	ug/L	10	68	(0%-20%)			
Benzo(k)fluoranthene	100	U	0.273	69.8	ug/L	5	70	(0%-20%)			
Benzyl alcohol	100	U	2.73	62.9	ug/L	10	63	(0%-20%)			
Butylbenzylphthalate	100	U	2.73	65.9	ug/L	2	66	(0%-20%)			
Carbazole	100	U	0.273	65.5	ug/L	1	65	(0%-20%)			
Chrysene	100	U	0.273	66.9	ug/L	3	67	(0%-20%)			
Di-n-butylphthalate	100	U	2.73	66.1	ug/L	1	66	(0%-20%)			
Di-n-octylphthalate	100	U	2.73	57.2	ug/L	1	57	(0%-20%)			
Dibenzo(a,h)anthracene	100	U	0.273	70.1	ug/L	9	70	(0%-20%)			
Dibenzofuran	100	U	2.73	64.4	ug/L	4	64	(0%-20%)			
Diethylphthalate	100	U	2.73	72.0	ug/L	7	72	(0%-20%)			
Dimethylphthalate	100	U	2.73	72.7	ug/L	5	73	(0%-20%)			
Fluoranthene	100	U	0.273	68.2	ug/L	2	68	(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
Fluorene	100	U	0.273	66.8	ug/L	6	67	(0%-20%)	JMB3	12/18/17	20:46
Hexachlorobenzene	100	U	2.73	66.3	ug/L	2	66	(0%-20%)			
Hexachlorobutadiene	100	U	2.73	52.3	ug/L	12	52	(0%-20%)			
Hexachlorocyclopentadiene	100	U	2.73	41.7	ug/L	7	42	(0%-20%)			
Hexachloroethane	100	U	2.73	53.9	ug/L	14	54	(0%-20%)			
Indeno(1,2,3-cd)pyrene	100	U	0.273	67.8	ug/L	8	68	(0%-20%)			
Isophorone	100	U	3.18	61.4	ug/L	8	61	(0%-20%)			
N-Methyl-N-nitrosomethylamine	100	U	2.73	48.7	ug/L	13	49	(0%-20%)			
N-Nitrosodipropylamine	100	U	2.73	61.9	ug/L	8	62	(0%-20%)			
N-Nitrosopyrrolidine	100	U	2.73	77.2	ug/L	13	77	(0%-20%)			
Naphthalene	100	U	0.273	55.4	ug/L	8	55	(0%-20%)			
Nitrobenzene	100	U	2.73	63.1	ug/L	5	63	(0%-20%)			
Pentachlorophenol	100	U	2.73	72.8	ug/L	6	73	(0%-20%)			
Phenanthrene	100	U	0.273	65.2	ug/L	0	65	(0%-20%)			
Phenol	100	U	2.73	38.3	ug/L	11	38	(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
Pyrene	100	U	0.273	63.6	ug/L	0	64	(0%-20%)	JMB3	12/18/17	20:46
Pyridine	100	U	2.73	49.3	ug/L	12	49	(0%-20%)			
Tributylphosphate	100	U	2.73	84.6	ug/L	4	85	(0%-20%)			
bis(2-Chloro-1-methylethyl)ether	100	U	2.73	64.3	ug/L	10	64	(0%-20%)			
bis(2-Chloroethoxy)methane	100	U	2.73	64.6	ug/L	8	65	(0%-20%)			
bis(2-Chloroethyl) ether	100	U	2.73	66.6	ug/L	10	67	(0%-20%)			
bis(2-Ethylhexyl)phthalate	100	U	2.73	61.9	ug/L	0	61	(0%-20%)			
diphenylamine+N-nitrosodiphenylamine	100	U	2.73	62.1	ug/L	2	62	(0%-20%)			
m,p-Cresols	100	U	3.36	65.8	ug/L	13	66	(0%-20%)			
m-Nitroaniline	100	U	2.73	84.3	ug/L	5	84	(0%-20%)			
o-Cresol	100	U	2.73	63.5	ug/L	15	63	(0%-20%)			
o-Nitroaniline	100	U	2.73	65.5	ug/L	5	65	(0%-20%)			
p-Nitroaniline	100	U	2.73	68.7	ug/L	9	69	(0%-20%)			
**2,4,6-Tribromophenol	200		55.8	143	ug/L		72	(32%-124%)			
**2-Fluorobiphenyl	100		26.4	58.3	ug/L		58	(32%-112%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatile-GC/MS</b>											
Batch	1726826										
**2-Fluorophenol	200	22.2		106	ug/L		53	(15%-88%)	JMB3	12/18/17	20:46
**Nitrobenzene-d5	100	26.0		61.5	ug/L		61	(36%-115%)			
**Phenol-d5	200	13.7		74.7	ug/L		37	(15%-91%)			
**p-Terphenyl-d14	100	29.5		74.3	ug/L		74	(36%-121%)			

**Notes:**

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

<sup>\*</sup>The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

## Semi-Volatile

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## Surrogate Recovery Report

SDG Number: GEL439941

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203937915	LCS for batch 1725968	32	20	56	45	71	68
1203937918	LCSD for batch 1725968	34	20	58	48	70	68
1203937914	MB for batch 1725968	36	21	64	44	70	76
439941003	B3FJW6	32	19	60	56	75	72
1203937921	B3FJW6MS	50	38	62	58	79	76
1203937922	B3FJW6MSD	51	38	65	61	76	80
439941004	B3FJX1	30	18	63	66	69	77
1203940034	MB for batch 1726824	30	20	58	50	63	62
1203940035	LCS for batch 1726824	35	20	61	55	68	59
439941002	B3FKB8	24	15	57	58	61	65
1203940053	B3FKB8MS	45	33	59	55	68	72
1203940054	B3FKB8MSD	53	37	61	58	72	74

**Surrogate****Acceptance Limits**

2FP	= 2-Fluorophenol	(15%-88%)
PHL	= Phenol-d5	(15%-91%)
NBZ	= Nitrobenzene-d5	(36%-115%)
FBP	= 2-Fluorobiphenyl	(32%-112%)
TBP	= 2,4,6-Tribromophenol	(32%-124%)
TPH	= p-Terphenyl-d14	(36%-121%)

# Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

# Pesticide Analysis

# Case Narrative

**GC Semivolatile Pesticide  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL439941  
Work Order #: 439941**

**Product: Organochlorine Pesticides and Chlorinated Hydrocarbons****Analytical Method:** SW846 3535A/8081B**Analytical Procedure:** GL-OA-E-041 REV# 18**Analytical Batch:** 1726189**Preparation Method:** SW846 3535A**Preparation Procedure:** GL-OA-E-070 REV# 9**Preparation Batch:** 1726187

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941005	B3FMC0
439941006	B3FN12
439941007	B3FN13
1203938429	Method Blank (MB)
1203938430	Laboratory Control Sample (LCS)
1203938433	439941005(B3FMC0) Matrix Spike (MS)
1203938434	439941005(B3FMC0) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information****Continuing Calibration Verification (CCV) Requirements**

Calibration verification standards (ICV or CCV) requirements have not been met for samples 439941005 (B3FMC0), 439941006 (B3FN12) and 439941007 (B3FN13) in this batch in this SDG. One or more target analytes failed acceptance criteria with a negative bias on one analytical column in the standards bracketing the samples in this SDG. These target analytes were not detected above the PQL on either of the columns in the associated environmental samples; therefore, the non-compliance had no adverse effect on the data.

**Quality Control (QC) Information****Laboratory Control Sample (LCS/LCSD) Recovery**

The LCS and/or LCSD (See Below) did not meet the spike recovery acceptance limits on one analytical column while met the recovery acceptance criteria on the other column. As target analytes were not detected on either of the columns in the associated environmental sample, the results were reported.

<b>Sample</b>	<b>Analyte</b>	<b>Value</b>

1203938430 (LCS)	4, 4'-DDE	67* (70%-130%)
	Endrin aldehyde	66* (70%-130%)

#### **Matrix Spike (MS/MSD) Recovery Statement**

Matrix QC sample (See Below) did not meet spike recovery acceptance criteria. All other QC samples in this batch met spike recovery criteria. The poor recovery appears to have been isolated to this single matrix QC sample.

Sample	Analyte	Value
1203938434 (B3FMC0MSD)	Endrin	4* (15%-151%)
	gamma-BHC (Lindane)	34* (35%-131%)

#### **MS/MSD Relative Percent Difference (RPD) Statement**

The RPD values between the MS and MSD, (See Below), were not within the acceptance limits due to the large difference between the individual recoveries in each MS and MSD analyte pair.

Sample	Analyte	Value
1203938433MS and 1203938434MSD (B3FMC0)	Several	See applicable report

#### **Technical Information**

##### **Florisil**

Florisil clean-up was not performed on client and quality control samples in this batch.

#### **Miscellaneous Information**

##### **Manual Integrations**

Samples 1203938430 (LCS), 1203938434 (B3FMC0MSD), 439941005 (B3FMC0) and 439941007 (B3FN13) required manual integration to correctly position the baseline as set in the calibration standard injections.

#### **Additional Comments**

The Toxaphene and/or Chlordane standards were analyzed for this SDG as a retention time marker and pattern reference. A five-point calibration curve and calibration verification standard forms were not submitted in the data package since Toxaphene and/or Chlordane were not detected in the client samples.

#### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company  
Client SDG: GEL439941 GEL Work Order: 439941

**The Qualifiers in this report are defined as follows:**

J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated

T Spike and/or spike duplicate sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

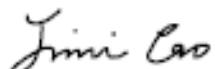
RE Indicates that sample is re-extracted.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:**



**Name:** Jimin Cao

**Date:** 15 DEC 2017

**Title:** Data Validator

# Sample Data Summary

**Pesticide  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941005

<b>Date Collected:</b>	12/11/2017 12:05	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3535A/8081B	<b>SOP Ref:</b>	GL-OA-E-041
<b>Inst:</b>	ECD7A.I	<b>Dilution:</b>	1
<b>Analyst:</b>	LOF	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1000 mL	<b>Final Volume:</b>	5 mL
<b>Column:</b>	1 CLPesticides 2 CLPesticides2		

**Client ID:** B3FMC0  
**Batch ID:** 1726189  
**Run Date:** 12/14/2017 17:27  
**Prep Date:** 12/14/2017 09:00  
**Data File:** 121417.B\c7l1416.D  
 121417.B\c7l1416.D

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL	Column
309-00-2	Aldrin	U	0.00665	ug/L	0.00665	0.020	0.050	1
60-57-1	Dieldrin	U	0.010	ug/L	0.010	0.040	0.050	1
959-98-8	Endosulfan I	U	0.00665	ug/L	0.00665	0.020	0.050	1
76-44-8	Heptachlor	U	0.00665	ug/L	0.00665	0.020	0.050	1
1024-57-3	Heptachlor epoxide	U	0.00665	ug/L	0.00665	0.020	0.050	1
319-84-6	alpha-BHC	U	0.00665	ug/L	0.00665	0.020	0.050	1
319-85-7	beta-BHC	U	0.00665	ug/L	0.00665	0.020	0.050	1
5103-71-9	cis-Chlordane	U	0.00665	ug/L	0.00665	0.020	0.050	1
319-86-8	delta-BHC	U	0.00665	ug/L	0.00665	0.020	0.050	1
58-89-9	gamma-BHC (Lindane)	TU	0.00665	ug/L	0.00665	0.020	0.050	1
72-54-8	4,4'-DDD	U	0.010	ug/L	0.010	0.040	0.100	1
72-55-9	4,4'-DDE	U	0.010	ug/L	0.010	0.040	0.100	1
50-29-3	4,4'-DDT	U	0.010	ug/L	0.010	0.040	0.100	1
33213-65-9	Endosulfan II	U	0.010	ug/L	0.010	0.040	0.100	1
1031-07-8	Endosulfan sulfate	U	0.010	ug/L	0.010	0.040	0.100	1
72-20-8	Endrin	TU	0.010	ug/L	0.010	0.040	0.100	1
7421-93-4	Endrin aldehyde	U	0.00665	ug/L	0.00665	0.040	0.100	1
53494-70-5	Endrin ketone	U	0.010	ug/L	0.010	0.040	0.100	1
72-43-5	Methoxychlor	U	0.050	ug/L	0.050	0.200	0.500	1
5103-74-2	trans-Chlordane	U	0.00665	ug/L	0.00665	0.020	0.500	1
8001-35-2	Toxaphene	U	0.150	ug/L	0.150	0.500	2.00	1

**Pesticide  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941006

<b>Date Collected:</b>	12/11/2017 09:36	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3535A/8081B	<b>SOP Ref:</b>	GL-OA-E-041
<b>Inst:</b>	ECD7A.I	<b>Dilution:</b>	1
<b>Analyst:</b>	LOF	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1050 mL	<b>Final Volume:</b>	5 mL
<b>Column:</b>	1 CLPesticides 2 CLPesticides2		

**Client ID:** B3FN12  
**Batch ID:** 1726189  
**Run Date:** 12/14/2017 18:16  
**Prep Date:** 12/14/2017 09:00  
**Data File:** 121417.B\c7l1419.D  
                   121417.B\c7l1419.D

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL	Column
309-00-2	Aldrin	U	0.00633	ug/L	0.00633	0.019	0.050	1
60-57-1	Die�drin	U	0.00952	ug/L	0.00952	0.0381	0.050	1
959-98-8	Endosulfan I	U	0.00633	ug/L	0.00633	0.019	0.050	1
76-44-8	Heptachlor	U	0.00633	ug/L	0.00633	0.019	0.050	1
1024-57-3	Heptachlor epoxide	U	0.00633	ug/L	0.00633	0.019	0.050	1
319-84-6	alpha-BHC	U	0.00633	ug/L	0.00633	0.019	0.050	1
319-85-7	beta-BHC	U	0.00633	ug/L	0.00633	0.019	0.050	1
5103-71-9	cis-Chlordane	U	0.00633	ug/L	0.00633	0.019	0.050	1
319-86-8	delta-BHC	U	0.00633	ug/L	0.00633	0.019	0.050	1
58-89-9	gamma-BHC (Lindane)	TU	0.00633	ug/L	0.00633	0.019	0.050	1
72-54-8	4,4'-DDD	U	0.00952	ug/L	0.00952	0.0381	0.100	1
72-55-9	4,4'-DDE	U	0.00952	ug/L	0.00952	0.0381	0.100	1
50-29-3	4,4'-DDT	U	0.00952	ug/L	0.00952	0.0381	0.100	1
33213-65-9	Endosulfan II	U	0.00952	ug/L	0.00952	0.0381	0.100	1
1031-07-8	Endosulfan sulfate	U	0.00952	ug/L	0.00952	0.0381	0.100	1
72-20-8	Endrin	TU	0.00952	ug/L	0.00952	0.0381	0.100	1
7421-93-4	Endrin aldehyde	U	0.00633	ug/L	0.00633	0.0381	0.100	1
53494-70-5	Endrin ketone	U	0.00952	ug/L	0.00952	0.0381	0.100	1
72-43-5	Methoxychlor	U	0.0476	ug/L	0.0476	0.190	0.500	1
5103-74-2	trans-Chlordane	U	0.00633	ug/L	0.00633	0.019	0.500	1
8001-35-2	Toxaphene	U	0.143	ug/L	0.143	0.476	2.00	1

**Pesticide  
Certificate of Analysis  
Sample Summary**

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**SDG Number:** GEL439941  
**Lab Sample ID:** 439941007

<b>Date Collected:</b>	12/11/2017 08:48	<b>Matrix:</b>	WATER
<b>Date Received:</b>	12/13/2017 09:20		
<b>Client:</b>	CPRC001	<b>Project:</b>	CPRC0W18012
<b>Method:</b>	SW846 3535A/8081B	<b>SOP Ref:</b>	GL-OA-E-041
<b>Inst:</b>	ECD7A.I	<b>Dilution:</b>	1
<b>Analyst:</b>	LOF	<b>Inj. Vol:</b>	1 uL
<b>Aliquot:</b>	1050 mL	<b>Final Volume:</b>	5 mL
<b>Column:</b>	1 CLPesticides 2 CLPesticides2		

**Client ID:** B3FN13  
**Batch ID:** 1726189  
**Run Date:** 12/14/2017 18:32  
**Prep Date:** 12/14/2017 09:00  
**Data File:** 121417.B\c7l1420.D  
                   121417.B\c7l1420.D

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL	Column
309-00-2	Aldrin	U	0.00633	ug/L	0.00633	0.019	0.050	1
60-57-1	Die�drin	U	0.00952	ug/L	0.00952	0.0381	0.050	1
959-98-8	Endosulfan I	U	0.00633	ug/L	0.00633	0.019	0.050	1
76-44-8	Heptachlor	U	0.00633	ug/L	0.00633	0.019	0.050	1
1024-57-3	Heptachlor epoxide	U	0.00633	ug/L	0.00633	0.019	0.050	1
319-84-6	alpha-BHC	U	0.00633	ug/L	0.00633	0.019	0.050	1
319-85-7	beta-BHC	U	0.00633	ug/L	0.00633	0.019	0.050	1
5103-71-9	cis-Chlordane	U	0.00633	ug/L	0.00633	0.019	0.050	1
319-86-8	delta-BHC	U	0.00633	ug/L	0.00633	0.019	0.050	1
58-89-9	gamma-BHC (Lindane)	TU	0.00633	ug/L	0.00633	0.019	0.050	1
72-54-8	4,4'-DDD	U	0.00952	ug/L	0.00952	0.0381	0.100	1
72-55-9	4,4'-DDE	U	0.00952	ug/L	0.00952	0.0381	0.100	1
50-29-3	4,4'-DDT	U	0.00952	ug/L	0.00952	0.0381	0.100	1
33213-65-9	Endosulfan II	U	0.00952	ug/L	0.00952	0.0381	0.100	1
1031-07-8	Endosulfan sulfate	U	0.00952	ug/L	0.00952	0.0381	0.100	1
72-20-8	Endrin	TU	0.00952	ug/L	0.00952	0.0381	0.100	1
7421-93-4	Endrin aldehyde	U	0.00633	ug/L	0.00633	0.0381	0.100	1
53494-70-5	Endrin ketone	U	0.00952	ug/L	0.00952	0.0381	0.100	1
72-43-5	Methoxychlor	U	0.0476	ug/L	0.0476	0.190	0.500	1
5103-74-2	trans-Chlordane	U	0.00633	ug/L	0.00633	0.019	0.500	1
8001-35-2	Toxaphene	U	0.143	ug/L	0.143	0.476	2.00	1

# Quality Control Summary

## Pesticide

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## Surrogate Recovery Report

**SDG Number:** GEL439941**Matrix Type:** LIQUID

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203938429	MB for batch 1726187	76	85	74	77
1203938430	LCS for batch 1726187	65	71	73	77
439941005	B3FMC0	61	63	65	69
1203938433	B3FMC0MS	74	74	75	80
1203938434	B3FMC0MSD	36	37	39	41
439941006	B3FN12	62	64	67	72
439941007	B3FN13	64	65	68	73

**Surrogate****Acceptance Limits**

4CMX = 4cmx (34%-109%)

DCB = Decachlorobiphenyl (34%-133%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

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**QC Summary**

Report Date: December 15, 2017

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**CH2MHill Plateau Remediation Company**  
**MSIN R3-50 CHPRC**  
**PO Box 1600**  
**Richland, Washington**

Contact: Mr. Scot Fitzgerald

Workorder: 439941

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-Pesticide</b>											
Batch	1726189										
QC1203938430	LCS										
4,4'-DDD		1.25		0.879	ug/L		70	(70%-130%)	LOF	12/14/17	17:11
4,4'-DDE		1.25		0.842	ug/L		67*	(70%-130%)			
4,4'-DDT		1.25		0.942	ug/L		75	(70%-130%)			
Aldrin		0.500		0.365	ug/L		73	(70%-130%)			
Dieldrin		1.25		0.982	ug/L		79	(70%-130%)			
Endosulfan I		0.500		0.397	ug/L		79	(70%-130%)			
Endosulfan II		1.25		1.00	ug/L		80	(70%-130%)			
Endosulfan sulfate		1.25		0.990	ug/L		79	(70%-130%)			
Endrin		1.25		1.06	ug/L		85	(70%-130%)			
Endrin aldehyde		1.25		0.820	ug/L		66*	(70%-130%)			
Endrin ketone		1.25		0.980	ug/L		78	(70%-130%)			
Heptachlor		0.500		0.389	ug/L		78	(70%-130%)			
Heptachlor epoxide		0.500		0.392	ug/L		78	(70%-130%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-Pesticide</b>										
Batch 1726189										
Methoxychlor	5.00		3.86	ug/L		77	(70%-130%)	LOF	12/14/17	17:11
alpha-BHC	0.500		0.431	ug/L		86	(70%-130%)			
beta-BHC	0.500		0.373	ug/L		75	(70%-130%)			
cis-Chlordane	0.500		0.415	ug/L		83	(70%-130%)			
delta-BHC	0.500		0.434	ug/L		87	(70%-130%)			
gamma-BHC (Lindane)	0.500		0.414	ug/L		83	(70%-130%)			
trans-Chlordane	0.500	J	0.373	ug/L		75	(70%-130%)			
**4cmx	1.00		0.647	ug/L		65	(34%-109%)			
**Decachlorobiphenyl	1.00		0.731	ug/L		73	(34%-133%)			
QC1203938429 4,4'-DDD	MB		U	0.010	ug/L				12/14/17	16:55
4,4'-DDE			U	0.010	ug/L					
4,4'-DDT			U	0.010	ug/L					
Aldrin			U	0.00665	ug/L					
Dieldrin			U	0.010	ug/L					
Endosulfan I			U	0.00665	ug/L					

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-Pesticide</b>											
Batch	1726189										
Endosulfan II			U	0.010	ug/L					LOF	12/14/17 16:55
Endosulfan sulfate			U	0.010	ug/L						
Endrin			U	0.010	ug/L						
Endrin aldehyde			U	0.00665	ug/L						
Endrin ketone			U	0.010	ug/L						
Heptachlor			U	0.00665	ug/L						
Heptachlor epoxide			U	0.00665	ug/L						
Methoxychlor			U	0.050	ug/L						
Toxaphene			U	0.150	ug/L						
alpha-BHC			U	0.00665	ug/L						
beta-BHC			U	0.00665	ug/L						
cis-Chlordane			U	0.00665	ug/L						
delta-BHC			U	0.00665	ug/L						
gamma-BHC (Lindane)			U	0.00665	ug/L						
trans-Chlordane			U	0.00665	ug/L						

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-Pesticide</b>											
Batch	1726189										
**4cmx	1.00			0.760	ug/L		76	(34%-109%)	LOF	12/14/17	16:55
**Decachlorobiphenyl	1.00			0.740	ug/L		74	(34%-133%)			
QC1203938433 439941005 MS 4,4'-DDD	1.25	U	0.010	0.924	ug/L		74	(25%-151%)		12/14/17	17:44
4,4'-DDE	1.25	U	0.010	0.887	ug/L		71	(32%-126%)			
4,4'-DDT	1.25	U	0.010	1.02	ug/L		82	(24%-139%)			
Aldrin	0.500	U	0.00665	0.333	ug/L		67	(15%-128%)			
Dieldrin	1.25	U	0.010	1.04	ug/L		83	(40%-134%)			
Endosulfan I	0.500	U	0.00665	0.404	ug/L		81	(26%-133%)			
Endosulfan II	1.25	U	0.010	1.06	ug/L		84	(29%-133%)			
Endosulfan sulfate	1.25	U	0.010	1.05	ug/L		84	(32%-151%)			
Endrin	1.25	TU	0.010	1.26	ug/L		101	(15%-151%)			
Endrin aldehyde	1.25	U	0.00665	0.930	ug/L		74	(15%-132%)			
Endrin ketone	1.25	U	0.010	1.00	ug/L		80	(38%-148%)			
Heptachlor	0.500	U	0.00665	0.414	ug/L		83	(27%-131%)			
Heptachlor epoxide	0.500	U	0.00665	0.420	ug/L		84	(33%-134%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-Pesticide</b>											
Batch	1726189										
Methoxychlor	5.00	U	0.050	4.10	ug/L		82	(31%-148%)	LOF	12/14/17	17:44
alpha-BHC	0.500	U	0.00665	0.451	ug/L		90	(30%-133%)			
beta-BHC	0.500	U	0.00665	0.417	ug/L		83	(29%-138%)			
cis-Chlordane	0.500	U	0.00665	0.439	ug/L		88	(34%-128%)			
delta-BHC	0.500	U	0.00665	0.461	ug/L		92	(33%-141%)			
gamma-BHC (Lindane)	0.500	TU	0.00665	0.444	ug/L		89	(35%-131%)			
trans-Chlordane	0.500	U	0.00665 J	0.393	ug/L		79	(33%-138%)			
**4cmx	1.00		0.608	0.736	ug/L		74	(34%-109%)			
**Decachlorobiphenyl	1.00		0.650	0.752	ug/L		75	(34%-133%)			
QC1203938434 439941005 MSD 4,4'-DDD	1.25	U	0.010	0.445	ug/L	70*	36	(0%-20%)		12/14/17	18:00
4,4'-DDE	1.25	U	0.010	0.495	ug/L	57*	40	(0%-20%)			
4,4'-DDT	1.25	U	0.010	0.536	ug/L	62*	43	(0%-20%)			
Aldrin	0.500	U	0.00665	0.170	ug/L	65*	34	(0%-20%)			
Dieldrin	1.25	U	0.010	0.497	ug/L	71*	40	(0%-20%)			
Endosulfan I	0.500	U	0.00665	0.191	ug/L	72*	38	(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-Pesticide</b>											
Batch	1726189										
Endosulfan II	1.25	U	0.010	0.500	ug/L	71*	40	(0%-20%)	LOF	12/14/17	18:00
Endosulfan sulfate	1.25	U	0.010	0.481	ug/L	74*	38	(0%-20%)			
Endrin	1.25	TU	0.010 JT	0.0446	ug/L	186*	4 *	(0%-20%)			
Endrin aldehyde	1.25	U	0.00665	0.415	ug/L	77*	33	(0%-20%)			
Endrin ketone	1.25	U	0.010	0.681	ug/L	38*	54	(0%-20%)			
Heptachlor	0.500	U	0.00665	0.195	ug/L	72*	39	(0%-20%)			
Heptachlor epoxide	0.500	U	0.00665	0.191	ug/L	75*	38	(0%-20%)			
Methoxychlor	5.00	U	0.050	2.01	ug/L	68*	40	(0%-20%)			
alpha-BHC	0.500	U	0.00665	0.167	ug/L	92*	33	(0%-20%)			
beta-BHC	0.500	U	0.00665	0.149	ug/L	95*	30	(0%-20%)			
cis-Chlordane	0.500	U	0.00665	0.219	ug/L	67*	44	(0%-20%)			
delta-BHC	0.500	U	0.00665	0.175	ug/L	90*	35	(0%-20%)			
gamma-BHC (Lindane)	0.500	TU	0.00665 T	0.169	ug/L	90*	34 *	(0%-20%)			
trans-Chlordane	0.500	U	0.00665 J	0.203	ug/L	64*	41	(0%-20%)			
**4cmx	1.00		0.608	0.361	ug/L		36	(34%-109%)			

\*\*4cmx

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-Pesticide											
Batch	1726189										

\*\*Decachlorobiphenyl      1.00      0.650      0.390      ug/L      39      (34%-133%)      LOF      12/14/17 18:00

**Notes:**

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

<sup>^</sup> The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# PCB Analysis

# Case Narrative

**GC Semivolatile PCB  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL439941  
Work Order #: 439941**

**Product: Analysis of The Analysis of Polychlorinated Biphenyls by GC/ECD by ECD****Analytical Method:** 8082\_PCB\_GC**Analytical Procedure:** GL-OA-E-040 REV# 24**Analytical Batch:** 1729083**Preparation Method:** SW846 3535A**Preparation Procedure:** GL-OA-E-037 REV# 7**Preparation Batch:** 1729081

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941005	B3FMC0
439941006	B3FN12
439941007	B3FN13
1203945810	Method Blank (MB)
1203945811	Laboratory Control Sample (LCS)
1203945812	439941007(B3FN13) Matrix Spike (MS)
1203945813	439941007(B3FN13) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Quality Control (QC) Information****Laboratory Control Sample (LCS/LCSD) Recovery**

The LCS spike recovery was slightly below the acceptance limits for Aroclor-1260 on one analytical column while within the acceptance limits on the other column. This non-compliance had no adverse effects on the data as samples 439941005 (B3FMC0), 439941006 (B3FN12) and 439941007 (B3FN13) were not detected with any of the Aroclors on either of the columns.

<b>Sample</b>	<b>Analyte</b>	<b>Value</b>
1203945811 (LCS)	Aroclor-1260	68* (70%-130%)

**Technical Information****Preparation/Analytical Method Verification**

All samples and QC in this batch were cleaned using alumina in order to remove oil and other high molecular weight interferences. All reported analyte detections in client and quality control samples were within the

established retention time windows. Reported analyte concentrations were confirmed on dissimilar columns.

#### **Miscellaneous Information**

##### **Manual integrations**

Samples 1203945810 (MB), 1203945812 (B3FN13MS), 439941005 (B3FMC0) and 439941006 (B3FN12) required manual integration to correctly position the baseline as set in the calibration standard injections and to properly identify one or more peaks.

#### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company  
Client SDG: GEL439941 GEL Work Order: 439941

**The Qualifiers in this report are defined as follows:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

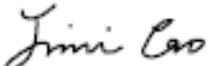
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:** 

**Name:** Jimin Cao

**Date:** 02 JAN 2018

**Title:** Data Validator

# Sample Data Summary

**PCB**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: GEL439941

Lab Sample ID: 439941005

Date Collected:	12/11/2017 12:05	Matrix:	WATER
Date Received:	12/13/2017 09:20		
Client:	CPRC001	Project:	CPRC0W18012
Method:	8082_PCB_GC	SOP Ref:	GL-OA-E-040
Inst:	ECD9A.I	Dilution:	1
Analyst:	YS1	Inj. Vol:	1 uL
Aliquot:	1050 mL	Final Volume:	1 mL
Column:	1 RTX-CLPEST 1		
	2 RTX-CLPEST 2		

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016	U	0.0317	ug/L	0.0317	0.0952	1
11104-28-2	Aroclor-1221	U	0.0317	ug/L	0.0317	0.0952	1
11141-16-5	Aroclor-1232	U	0.0317	ug/L	0.0317	0.0952	1
53469-21-9	Aroclor-1242	U	0.0317	ug/L	0.0317	0.0952	1
12672-29-6	Aroclor-1248	U	0.0317	ug/L	0.0317	0.0952	1
11097-69-1	Aroclor-1254	U	0.0317	ug/L	0.0317	0.0952	1
11096-82-5	Aroclor-1260	U	0.0317	ug/L	0.0317	0.0952	1

**PCB**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: GEL439941  
Lab Sample ID: 439941006  
Client ID: B3FN12  
Batch ID: 1729083  
Run Date: 01/02/2018 12:05  
Prep Date: 12/29/2017 08:00  
Data File: 010218.S\E9a0216.D  
010218.S\E9a0216.D

Date Collected: 12/11/2017 09:36 Matrix: WATER  
Date Received: 12/13/2017 09:20  
Client: CPRC001 Project: CPRC0W18012  
Method: 8082\_PCB\_GC SOP Ref: GL-OA-E-040  
Inst: ECD9A.I Dilution: 1  
Analyst: YS1 Inj. Vol: 1 uL  
Aliquot: 1050 mL Final Volume: 1 mL  
Column: 1 RTX-CLPEST 1  
2 RTX-CLPEST 2

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016	U	0.0317	ug/L	0.0317	0.0952	1
11104-28-2	Aroclor-1221	U	0.0317	ug/L	0.0317	0.0952	1
11141-16-5	Aroclor-1232	U	0.0317	ug/L	0.0317	0.0952	1
53469-21-9	Aroclor-1242	U	0.0317	ug/L	0.0317	0.0952	1
12672-29-6	Aroclor-1248	U	0.0317	ug/L	0.0317	0.0952	1
11097-69-1	Aroclor-1254	U	0.0317	ug/L	0.0317	0.0952	1
11096-82-5	Aroclor-1260	U	0.0317	ug/L	0.0317	0.0952	1

**PCB**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: GEL439941

Lab Sample ID: 439941007

Date Collected:	12/11/2017 08:48	Matrix:	WATER
Date Received:	12/13/2017 09:20		
Client:	CPRC001	Project:	CPRC0W18012
Method:	8082_PCB_GC	SOP Ref:	GL-OA-E-040
Inst:	ECD9A.I	Dilution:	1
Analyst:	YS1	Inj. Vol:	1 uL
Aliquot:	1000 mL	Final Volume:	1 mL
Column:	1 RTX-CLPEST 1		
	2 RTX-CLPEST 2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016	U	0.0333	ug/L	0.0333	0.100	1
11104-28-2	Aroclor-1221	U	0.0333	ug/L	0.0333	0.100	1
11141-16-5	Aroclor-1232	U	0.0333	ug/L	0.0333	0.100	1
53469-21-9	Aroclor-1242	U	0.0333	ug/L	0.0333	0.100	1
12672-29-6	Aroclor-1248	U	0.0333	ug/L	0.0333	0.100	1
11097-69-1	Aroclor-1254	U	0.0333	ug/L	0.0333	0.100	1
11096-82-5	Aroclor-1260	U	0.0333	ug/L	0.0333	0.100	1

# Quality Control Summary

**PCB**  
**Surrogate Recovery Report**

**SDG Number:** GEL439941**Matrix Type:** LIQUID

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203945810	MB for batch 1729081	63	57	96	66
1203945811	LCS for batch 1729081	80	72	91	82
439941005	B3FMC0	79	73	83	86
439941006	B3FN12	78	74	80	86
439941007	B3FN13	77	73	92	79
1203945812	B3FN13MS	74	68	84	84
1203945813	B3FN13MSD	77	72	98	86

**Surrogate****Acceptance Limits**

4CMX = 4cmx (33%-122%)

DCB = Decachlorobiphenyl (35%-138%)

# Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

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**QC Summary**

Report Date: March 21, 2018

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**CH2MHill Plateau Remediation Company**  
**MSIN R3-50 CHPRC**  
**PO Box 1600**  
**Richland, Washington**

Contact: Mr. Scot Fitzgerald

Workorder: 439941

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-PCB</b>											
Batch	1729083										
Aroclor-1016	QC1203945811 LCS	1.00		0.705	ug/L	70	(70%-130%)	YS1	01/02/18 11:28		
Aroclor-1260		1.00		0.681	ug/L	68*	(70%-130%)				
**4cmx		0.200		0.144	ug/L	72	(33%-122%)				
**Decachlorobiphenyl		0.200		0.163	ug/L	82	(35%-138%)				
Aroclor-1016	QC1203945810 MB		U	0.0333	ug/L					01/02/18 11:16	
Aroclor-1221			U	0.0333	ug/L						
Aroclor-1232			U	0.0333	ug/L						
Aroclor-1242			U	0.0333	ug/L						
Aroclor-1248			U	0.0333	ug/L						
Aroclor-1254			U	0.0333	ug/L						
Aroclor-1260			U	0.0333	ug/L						
**4cmx		0.200		0.115	ug/L	57	(33%-122%)				
**Decachlorobiphenyl		0.200		0.132	ug/L	66	(35%-138%)				

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-PCB</b>											
Batch	1729083										
QC1203945812	439941007	MS									
Aroclor-1016		1.00	U	0.0333		0.728		ug/L		73	(26%-110%)
Aroclor-1260		1.00	U	0.0333		0.779		ug/L		78	(30%-127%)
**4cmx		0.200		0.146		0.136		ug/L		68	(33%-122%)
**Decachlorobiphenyl		0.200		0.157		0.167		ug/L		84	(35%-138%)
QC1203945813	439941007	MSD									
Aroclor-1016		1.00	U	0.0333		0.751		ug/L	3	75	(0%-20%)
Aroclor-1260		1.00	U	0.0333		0.805		ug/L	3	81	(0%-20%)
**4cmx		0.200		0.146		0.145		ug/L		72	(33%-122%)
**Decachlorobiphenyl		0.200		0.157		0.171		ug/L		86	(35%-138%)

**Notes:**

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

<sup>^</sup>The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# Herbicide Analysis

# Case Narrative

**GC Semivolatile Herbicide  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL439941  
Work Order #: 439941**

**Product: Analysis of Chlorophenoxy Acid Herbicides by ECD****Analytical Method:** SW846 8151A**Analytical Procedure:** GL-OA-E-011 REV# 24**Analytical Batches:** 1726468 and 1726467

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941005	B3FMC0
439941006	B3FN12
439941007	B3FN13
1203939187	Method Blank (MB)
1203939188	Laboratory Control Sample (LCS)
1203939189	439941006(B3FN12) Matrix Spike (MS)
1203939190	439941006(B3FN12) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information****Continuing Calibration Verification (CCV) Requirements**

The calibration verification standards (CCV) did not meet acceptance criteria. One or more target analytes failed acceptance criteria with a positive bias on one or both analytical columns in the standards bracketing samples and associated QC. The positive bias for the analytical data is a result of instrument response increasing after the initial calibration. As there were no target analytes detected in the associated samples, the data were reported. All analytes were within the established retention time windows for this method.

**Quality Control (QC) Information****Surrogate Recoveries**

Sample (See Below) did not meet surrogate recovery acceptance criteria. Since there were no target analytes detected in the associated sample above the reporting limits, the biased high surrogate recovery had no adverse impact on the reported data.

Sample	Analyte	Value
1203939188 (LCS)	2, 4-Dichlorophenylacetic acid	145* (42%-136%)

**Laboratory Control Sample (LCS) Recovery**

The LCS(See Below) did not meet the CPRC spike recovery acceptance criteria for Dinoseb. Dinoseb was well

within GEL SPC acceptance limits. Dinoseb was also well within the spike recovery acceptance limits in the MS and MSD. The data were reported.

Sample	Analyte	Value
1203939188 (LCS)	Dinoseb	60* (70%-130%)

#### **MS/MSD Relative Percent Difference (RPD) Statement**

The RPD between the MS and MSD (See Below) did not meet acceptance criteria. As the spike recoveries were within the acceptance limits, the RPD failure did not adversely impact the data results.

Sample	Analyte	Value
1203939189MS and 1203939190MSD (B3FN12)	2, 4-DB	RPD 29* (0%-20%)
	Dinoseb	RPD 21* (0%-20%)

#### **Miscellaneous Information**

##### **Manual Integrations**

Samples 1203939189 (B3FN12MS) and 1203939190 (B3FN12MSD) required manual integration to correctly position the baseline as set in the calibration standard injections.

#### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company  
Client SDG: GEL439941 GEL Work Order: 439941

**The Qualifiers in this report are defined as follows:**

- T Spike and/or spike duplicate sample recovery is outside control limits.  
U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
DL Indicates that sample is diluted.  
RA Indicates that sample is re-analyzed without re-extraction.  
RE Indicates that sample is re-extracted.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:** 

**Name:** Barbara Bailey

**Date:** 21 MAR 2018

**Title:** Data Validator

# Sample Data Summary

**Herbicide**  
**Certificate of Analysis**  
**Sample Summary**

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SDG Number: GEL439941  
Lab Sample ID: 439941005  
Client ID: B3FMC0  
Batch ID: 1726468  
Run Date: 12/18/2017 20:44  
Prep Date: 12/18/2017 09:05  
Data File: 121817|E3L1816.D  
121817|E3L1816.D

Date Collected: 12/11/2017 12:05 Matrix: WATER  
Date Received: 12/13/2017 09:20  
Client: CPRC001 Project: CPRC0W18012  
Method: SW846 8151A SOP Ref: GL-OA-E-011  
Inst: ECD3A.I Dilution: 1  
Analyst: LOF Inj. Vol: 1 uL  
Aliquot: 1050 mL Final Volume: 10 mL  
Column: 1 RTX-CLPEST 1  
2 RTX-CLPEST 2

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
93-76-5	2,4,5-T	U	0.0794	ug/L	0.0794	0.238	1
93-72-1	2,4,5-TP	U	0.0794	ug/L	0.0794	0.238	1
94-75-7	2,4-D	U	0.0794	ug/L	0.0794	0.238	1
94-82-6	2,4-DB	U	0.0879	ug/L	0.0879	0.238	1
75-99-0	Dalapon	U	1.59	ug/L	1.59	4.76	1
1918-00-9	Dicamba	U	0.0794	ug/L	0.0794	0.238	1
120-36-5	Dichlorprop	U	0.0794	ug/L	0.0794	0.238	1
88-85-7	Dinoseb	U	0.0794	ug/L	0.0794	0.238	1
94-74-6	MCPA	U	15.9	ug/L	15.9	47.6	1
93-65-2	MCPP	U	15.9	ug/L	15.9	47.6	1

**Herbicide**  
**Certificate of Analysis**  
**Sample Summary**

Page 1 of 1

SDG Number: GEL439941  
Lab Sample ID: 439941006  
Client ID: B3FN12  
Batch ID: 1726468  
Run Date: 12/18/2017 21:17  
Prep Date: 12/18/2017 09:05  
Data File: 121817|E3L1817.D  
121817|E3L1817.D

Date Collected: 12/11/2017 09:36 Matrix: WATER  
Date Received: 12/13/2017 09:20  
Client: CPRC001 Project: CPRC0W18012  
Method: SW846 8151A SOP Ref: GL-OA-E-011  
Inst: ECD3A.I Dilution: 1  
Analyst: LOF Inj. Vol: 1 uL  
Aliquot: 1000 mL Final Volume: 10 mL  
Column: 1 RTX-CLPEST 1  
2 RTX-CLPEST 2

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
93-76-5	2,4,5-T	U	0.0833	ug/L	0.0833	0.250	1
93-72-1	2,4,5-TP	U	0.0833	ug/L	0.0833	0.250	1
94-75-7	2,4-D	U	0.0833	ug/L	0.0833	0.250	1
94-82-6	2,4-DB	U	0.0923	ug/L	0.0923	0.250	1
75-99-0	Dalapon	U	1.67	ug/L	1.67	5.00	1
1918-00-9	Dicamba	U	0.0833	ug/L	0.0833	0.250	1
120-36-5	Dichlorprop	U	0.0833	ug/L	0.0833	0.250	1
88-85-7	Dinoseb	U	0.0833	ug/L	0.0833	0.250	1
94-74-6	MCPA	U	16.7	ug/L	16.7	50.0	1
93-65-2	MCPP	U	16.7	ug/L	16.7	50.0	1

**Herbicide**  
**Certificate of Analysis**  
**Sample Summary**

Page 1 of 1

SDG Number: GEL439941  
Lab Sample ID: 439941007  
Client ID: B3FN13  
Batch ID: 1726468  
Run Date: 12/18/2017 22:58  
Prep Date: 12/18/2017 09:05  
Data File: 121817|E3L1820.D  
121817|E3L1820.D

Date Collected: 12/11/2017 08:48  
Date Received: 12/13/2017 09:20  
Client: CPRC001  
Method: SW846 8151A  
Inst: ECD3A.I  
Analyst: LOF  
Aliquot: 1040 mL  
Column: 1 RTX-CLPEST 1  
2 RTX-CLPEST 2  
Matrix: WATER  
Project: CPRC0W18012  
SOP Ref: GL-OA-E-011  
Dilution: 1  
Inj. Vol: 1 uL  
Final Volume: 10 mL

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
93-76-5	2,4,5-T	U	0.0801	ug/L	0.0801	0.240	1
93-72-1	2,4,5-TP	U	0.0801	ug/L	0.0801	0.240	1
94-75-7	2,4-D	U	0.0801	ug/L	0.0801	0.240	1
94-82-6	2,4-DB	U	0.0887	ug/L	0.0887	0.240	1
75-99-0	Dalapon	U	1.60	ug/L	1.60	4.81	1
1918-00-9	Dicamba	U	0.0801	ug/L	0.0801	0.240	1
120-36-5	Dichlorprop	U	0.0801	ug/L	0.0801	0.240	1
88-85-7	Dinoseb	U	0.0801	ug/L	0.0801	0.240	1
94-74-6	MCPA	U	16.0	ug/L	16.0	48.1	1
93-65-2	MCPP	U	16.0	ug/L	16.0	48.1	1

# Quality Control Summary

## Herbicide

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## Surrogate Recovery Report

**SDG Number:** GEL439941**Matrix Type:** LIQUID

Sample ID	Client ID	DCAA 1 %REC #	DCAA 2 %REC #
1203939187	MB for batch 1726467	83	90
1203939188	LCS for batch 1726467	91	145 *
439941005	B3FMC0	93	94
439941006	B3FN12	86	84
1203939189	B3FN12MS	87	113
1203939190	B3FN12MSD	94	109
439941007	B3FN13	89	91

**Surrogate****Acceptance Limits**

DCAA = 2,4-Dichlorophenylacetic acid (42%-136%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

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**QC Summary**

Report Date: December 20, 2017

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**CH2MHill Plateau Remediation Company**  
**MSIN R3-50 CHPRC**  
**PO Box 1600**  
**Richland, Washington**  
**Contact: Mr. Scot Fitzgerald**

**Workorder: 439941**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-HERB</b>											
Batch	1726468										
QC1203939188	LCS										
2,4,5-T		2.00		1.95	ug/L		97	(70%-130%)	LOF	12/18/17	20:24
2,4,5-TP		2.00		2.05	ug/L		103	(70%-130%)			
2,4-D		2.00		1.69	ug/L		85	(70%-130%)			
2,4-DB		2.00		1.81	ug/L		90	(70%-130%)			
Dalapon		20.0		17.2	ug/L		86	(70%-130%)			
Dicamba		2.00		1.74	ug/L		87	(70%-130%)			
Dichlorprop		2.00		1.70	ug/L		85	(70%-130%)			
Dinoseb		2.00		1.20	ug/L		60*	(70%-130%)			
MCPA		200		170	ug/L		85	(70%-130%)			
MCPP		200		152	ug/L		76	(70%-130%)			
**2,4-Dichlorophenylacetic acid		5.00		4.55	ug/L		91	(42%-136%)			
QC1203939187	MB										
2,4,5-T			U	0.0833	ug/L					12/18/17	20:05
2,4,5-TP			U	0.0833	ug/L						

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-HERB</b>											
Batch	1726468										
2,4-D			U	0.0833	ug/L				LOF	12/18/17	20:05
2,4-DB			U	0.0923	ug/L						
Dalapon			U	1.67	ug/L						
Dicamba			U	0.0833	ug/L						
Dichlorprop			U	0.0833	ug/L						
Dinoseb			U	0.0833	ug/L						
MCPA			U	16.7	ug/L						
MCPP			U	16.7	ug/L						
**2,4-Dichlorophenylacetic acid	5.00			4.14	ug/L		83	(42%-136%)			
2,4,5-T	QC1203939189 439941006 MS	2.00	U	0.0833	1.97	ug/L	98	(25%-143%)		12/18/17	21:51
2,4,5-TP		2.00	U	0.0833	1.96	ug/L	98	(34%-141%)			
2,4-D		2.00	U	0.0833	1.97	ug/L	98	(43%-138%)			
2,4-DB		2.00	U	0.0923	1.79	ug/L	89	(29%-154%)			
Dalapon		20.0	U	1.67	16.3	ug/L	81	(26%-129%)			
Dicamba		2.00	U	0.0833	1.70	ug/L	85	(35%-138%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-HERB</b>											
Batch	1726468										
Dichlorprop	2.00	U	0.0833	2.00	ug/L		100	(37%-144%)	LOF	12/18/17	21:51
Dinoseb	2.00	U	0.0833	1.46	ug/L		73	(19%-107%)			
MCPA	200	U	16.7	144	ug/L		72	(25%-140%)			
MCPP	200	U	16.7	131	ug/L		65	(23%-143%)			
**2,4-Dichlorophenylacetic acid	5.00		4.22	5.66	ug/L		113	(42%-136%)			
QC1203939190 439941006 MSD 2,4,5-T	2.00	U	0.0833	2.14	ug/L	8	107	(0%-20%)		12/18/17	22:24
2,4,5-TP	2.00	U	0.0833	2.12	ug/L	8	106	(0%-20%)			
2,4-D	2.00	U	0.0833	2.08	ug/L	5	104	(0%-20%)			
2,4-DB	2.00	U	0.0923	2.40	ug/L	29*	120	(0%-20%)			
Dalapon	20.0	U	1.67	16.0	ug/L	2	80	(0%-20%)			
Dicamba	2.00	U	0.0833	1.76	ug/L	4	88	(0%-20%)			
Dichlorprop	2.00	U	0.0833	2.06	ug/L	3	103	(0%-20%)			
Dinoseb	2.00	U	0.0833	1.80	ug/L	21*	90	(0%-20%)			
MCPA	200	U	16.7	150	ug/L	5	75	(0%-20%)			
MCPP	200	U	16.7	137	ug/L	5	69	(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-HERB</b>											
Batch	1726468										
**2,4-Dichlorophenylacetic acid	5.00		4.22	5.43	ug/L		109	(42%-136%)	LOF	12/18/17	22:24

**Notes:**

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

<sup>^</sup> The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# Metals Analysis

# Case Narrative

**Metals**  
**Technical Case Narrative**  
**CH2MHill Plateau Remediation Company (CPRC)**  
**SDG #: GEL439941**  
**Work Order #: 439941**

**Product: Determination of Metals by ICP**

**Analytical Method:** SW846 3005A/6010D

**Analytical Procedure:** GL-MA-E-013 REV# 30

**Analytical Batch:** 1726063

**Product: Determination of Metals by ICP-MS**

**Analytical Method:** SW846 3005A/6020B

**Analytical Procedure:** GL-MA-E-014 REV# 32

**Analytical Batch:** 1726073

**Product: Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer**

**Analytical Method:** 7470\_HG\_CVAA

**Analytical Procedure:** GL-MA-E-010 REV# 36

**Analytical Batch:** 1726632

**Preparation Method:** SW846 3005A

**Preparation Procedure:** GL-MA-E-006 REV# 14

**Preparation Batches:** 1726062 and 1726072

**Preparation Method:** SW846 7470A Prep

**Preparation Procedure:** GL-MA-E-010 REV# 36

**Preparation Batch:** 1726630

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941001	B3FKC1
439941002	B3FKB8
1203938123	Method Blank (MB)ICP
1203938124	Laboratory Control Sample (LCS)
1203938127	439922004(NonSDGL) Serial Dilution (SD)
1203938125	439922004(NonSDGS) Matrix Spike (MS)
1203938126	439922004(NonSDGSD) Matrix Spike Duplicate (MSD)
1203938143	Method Blank (MB)ICP-MS
1203938144	Laboratory Control Sample (LCS)
1203938147	439922001(NonSDGL) Serial Dilution (SD)
1203938145	439922001(NonSDGS) Matrix Spike (MS)
1203938146	439922001(NonSDGSD) Matrix Spike Duplicate (MSD)
1203939570	Method Blank (MB)CVAA
1203939571	Laboratory Control Sample (LCS)
1203939577	439941001(B3FKC1L) Serial Dilution (SD)
1203939575	439941001(B3FKC1D) Sample Duplicate (DUP)
1203939576	439941001(B3FKC1S) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information****CRDL/PQL Requirements**

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 439941001 (B3FKC1) and 439941002 (B3FKB8)-ICP.

**ICSA/ICSAB Statement**

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company  
Client SDG: GEL439941 GEL Work Order: 439941

**The Qualifiers in this report are defined as follows:**

- \* Duplicate analysis not within control limits
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:** 

**Name:** Nik-Cole Elmore

**Date:** 27 DEC 2017

**Title:** Data Validator

# Sample Data Summary

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** GEL439941**CONTRACT:** CPRC0W18012**METHOD TYPE:** SW846**SAMPLE ID:** 439941001**BASIS:** As Received**DATE COLLECTED** 11-DEC-17**CLIENT ID:** B3FKC1**LEVEL:** Low**DATE RECEIVED** 13-DEC-17**MATRIX:** WATER**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-38-2	Arsenic	7.53	ug/L		2	5	5	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-39-3	Barium	43	ug/L		0.67	2	2	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	12/19/17 14:09	171219-3	1726073
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	12/15/17 17:08	121517B-1	1726063
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-70-2	Calcium	58600	ug/L		50	200	200	1	P	HSC	12/15/17 17:08	121517B-1	1726063
7440-47-3	Chromium	4.51	ug/L	B	3	10	10	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	12/15/17 17:08	121517B-1	1726063
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7439-95-4	Magnesium	17000	ug/L		110	300	300	1	P	HSC	12/15/17 17:08	121517B-1	1726063
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTMI	12/18/17 11:43	121817W1-4	1726632
7439-98-7	Molybdenum	2.42	ug/L		0.2	0.5	0.5	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-02-0	Nickel	0.649	ug/L	B	0.6	2	2	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-09-7	Potassium	7160	ug/L		50	150	150	1	P	HSC	12/15/17 17:08	121517B-1	1726063
7782-49-2	Selenium	8.62	ug/L		2	5	5	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-23-5	Sodium	25400	ug/L		100	300	300	1	P	HSC	12/15/17 17:08	121517B-1	1726063
7440-24-6	Strontium	326	ug/L		2	10	10	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-61-1	Uranium	3.52	ug/L		0.067	0.2	0.2	1	MS	BAJ	12/19/17 02:24	171218-2	1726073
7440-62-2	Vanadium	18.7	ug/L		1	5	5	1	P	HSC	12/15/17 17:08	121517B-1	1726063
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	12/19/17 14:09	171219-3	1726073

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1726063	1726062	SW846 3005A	50	mL	50	mL	12/13/17	JXM8
1726073	1726072	SW846 3005A	50	mL	50	mL	12/13/17	JXM8

**METALS**  
-1-  
**INORGANICS ANALYSIS DATA PACKAGE**

1726632	1726630	SW846 7470A Prep	20	mL	20	mL	12/15/17	AXS5
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**\*Analytical Methods:**

P           **SW846 3005A/6010D**  
MS          **SW846 3005A/6020B**  
AV          **SW846 7470A**

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** GEL439941**CONTRACT:** CPRC0W18012**METHOD TYPE:** SW846**SAMPLE ID:** 439941002**BASIS:** As Received**DATE COLLECTED** 11-DEC-17**CLIENT ID:** B3FKB8**LEVEL:** Low**DATE RECEIVED** 13-DEC-17**MATRIX:** WATER**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-38-2	Arsenic	7.27	ug/L		2	5	5	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-39-3	Barium	42.2	ug/L		0.67	2	2	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	12/19/17 14:11	171219-3	1726073
7440-42-8	Boron	15	ug/L	B	15	50	50	1	P	HSC	12/15/17 17:11	121517B-1	1726063
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-70-2	Calcium	60300	ug/L		50	200	200	1	P	HSC	12/15/17 17:11	121517B-1	1726063
7440-47-3	Chromium	4.62	ug/L	B	3	10	10	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-50-8	Copper	0.497	ug/L	B	0.3	1	1	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	12/15/17 17:11	121517B-1	1726063
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7439-95-4	Magnesium	17500	ug/L		110	300	300	1	P	HSC	12/15/17 17:11	121517B-1	1726063
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTMI	12/18/17 11:53	121817W1-4	1726632
7439-98-7	Molybdenum	2.4	ug/L		0.2	0.5	0.5	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-02-0	Nickel	0.660	ug/L	B	0.6	2	2	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-09-7	Potassium	7400	ug/L		50	150	150	1	P	HSC	12/15/17 17:11	121517B-1	1726063
7782-49-2	Selenium	8.62	ug/L		2	5	5	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-23-5	Sodium	26700	ug/L		100	300	300	1	P	HSC	12/15/17 17:11	121517B-1	1726063
7440-24-6	Strontium	329	ug/L		2	10	10	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-61-1	Uranium	3.5	ug/L		0.067	0.2	0.2	1	MS	BAJ	12/19/17 02:27	171218-2	1726073
7440-62-2	Vanadium	19.3	ug/L		1	5	5	1	P	HSC	12/15/17 17:11	121517B-1	1726063
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	12/19/17 14:11	171219-3	1726073

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1726063	1726062	SW846 3005A	50	mL	50	mL	12/13/17	JXM8
1726073	1726072	SW846 3005A	50	mL	50	mL	12/13/17	JXM8

**METALS**  
-1-  
**INORGANICS ANALYSIS DATA PACKAGE**

1726632	1726630	SW846 7470A Prep	20	mL	20	mL	12/15/17	AXS5
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**\*Analytical Methods:**

P           **SW846 3005A/6010D**  
MS          **SW846 3005A/6020B**  
AV          **SW846 7470A**

# Quality Control Summary

**GEL LABORATORIES LLC**  
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Report Date: December 27, 2017

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**CH2MHill Plateau Remediation Company**  
**MSIN R3-50 CHPRC**  
**PO Box 1600**  
**Richland, Washington**

Contact: Mr. Scot Fitzgerald

Workorder: 439941

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1726073										
Aluminum	QC1203938144	LCS		2200	ug/L		110	(80%-120%)	BAJ	12/19/17	01:34
Antimony		2000		47.4	ug/L		94.7	(80%-120%)			
Arsenic		50.0		50.7	ug/L		101	(80%-120%)			
Barium		50.0		49.3	ug/L		98.6	(80%-120%)			
Beryllium		50.0		59.9	ug/L		120	(80%-120%)		12/19/17	13:50
Cadmium		50.0		52.1	ug/L		104	(80%-120%)		12/19/17	01:34
Chromium		50.0		52.4	ug/L		105	(80%-120%)			
Cobalt		50.0		51.4	ug/L		103	(80%-120%)			
Copper		50.0		52.5	ug/L		105	(80%-120%)			
Lead		50.0		51.0	ug/L		102	(80%-120%)			
Manganese		50.0		50.5	ug/L		101	(80%-120%)			
Molybdenum		50.0		50.6	ug/L		101	(80%-120%)			
Nickel		50.0		53.2	ug/L		106	(80%-120%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1726073										
Selenium	50.0			50.9	ug/L		102	(80%-120%)	BAJ	12/19/17	01:34
Silver	50.0			51.5	ug/L		103	(80%-120%)			
Strontium	50.0			51.6	ug/L		103	(80%-120%)			
Thallium	50.0			49.0	ug/L		98	(80%-120%)			
Thorium	50.0			48.7	ug/L		97.5	(80%-120%)			
Tin	50.0			51.3	ug/L		103	(80%-120%)			
Uranium	50.0			49.7	ug/L		99.4	(80%-120%)			
Zinc	50.0			49.9	ug/L		99.7	(80%-120%)			12/19/17 13:50
QC1203938143	MB										
Aluminum			U	19.3	ug/L						12/19/17 01:30
Antimony			U	1.00	ug/L						
Arsenic			U	2.00	ug/L						
Barium			U	0.670	ug/L						
Beryllium			U	0.200	ug/L						12/19/17 13:49
Cadmium			U	0.300	ug/L						12/19/17 01:30
Chromium			U	3.00	ug/L						

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1726073										
Cobalt			U	0.300	ug/L				BAJ	12/19/17	01:30
Copper			U	0.300	ug/L						
Lead			U	0.500	ug/L						
Manganese			U	1.00	ug/L						
Molybdenum			U	0.200	ug/L						
Nickel			U	0.600	ug/L						
Selenium			U	2.00	ug/L						
Silver			U	0.300	ug/L						
Strontium			U	2.00	ug/L						
Thallium			U	0.600	ug/L						
Thorium			U	0.700	ug/L						
Tin			U	1.00	ug/L						
Uranium			U	0.067	ug/L						
Zinc			U	3.30	ug/L					12/19/17	13:49
QC1203938145	439922001	MS									
Aluminum	2000	U	19.3		2100	ug/L		105	(75%-125%)	12/19/17	01:40

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1726073										
Antimony	50.0	U	1.00	48.1	ug/L		95.8	(75%-125%)	BAJ	12/19/17	01:40
Arsenic	50.0	B	2.71	50.2	ug/L		94.9	(75%-125%)			
Barium	50.0		27.8	76.6	ug/L		97.7	(75%-125%)			
Beryllium	50.0	U	0.200	56.6	ug/L		113	(75%-125%)		12/19/17	13:54
Cadmium	50.0	U	0.300	49.0	ug/L		97.9	(75%-125%)		12/19/17	01:40
Chromium	50.0		21.2	69.5	ug/L		96.5	(75%-125%)			
Cobalt	50.0	U	0.300	48.0	ug/L		96	(75%-125%)			
Copper	50.0	B	0.384	47.8	ug/L		94.9	(75%-125%)			
Lead	50.0	U	0.500	48.8	ug/L		97.5	(75%-125%)			
Manganese	50.0	U	1.00	45.8	ug/L		91.3	(75%-125%)			
Molybdenum	50.0		2.58	53.3	ug/L		101	(75%-125%)			
Nickel	50.0	U	0.600	48.1	ug/L		95.3	(75%-125%)			
Selenium	50.0	U	2.00	48.5	ug/L		95.2	(75%-125%)			
Silver	50.0	U	0.300	49.7	ug/L		99.4	(75%-125%)			
Strontium	50.0		211	260	ug/L		N/A	(75%-125%)			

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**QC Summary**

Workorder: 439941

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Paramname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1726073										
Thallium	50.0	U	0.600	46.5	ug/L		92.9	(75%-125%)	BAJ	12/19/17	01:40
Thorium	50.0	U	0.700	47.3	ug/L		94.4	(75%-125%)			
Tin	50.0	U	1.00	50.0	ug/L		99.6	(75%-125%)			
Uranium	50.0		1.65	50.4	ug/L		97.5	(75%-125%)			
Zinc	50.0	U	3.30	49.7	ug/L		92.8	(75%-125%)		12/19/17	13:54
QC1203938146	439922001	MSD									
Aluminum	2000	U	19.3	2180	ug/L	3.69	109	(0%-20%)		12/19/17	01:44
Antimony	50.0	U	1.00	48.4	ug/L	0.647	96.4	(0%-20%)			
Arsenic	50.0	B	2.71	52.9	ug/L	5.27	100	(0%-20%)			
Barium	50.0		27.8	77.8	ug/L	1.54	100	(0%-20%)			
Beryllium	50.0	U	0.200	56.3	ug/L	0.374	113	(0%-20%)		12/19/17	13:55
Cadmium	50.0	U	0.300	50.2	ug/L	2.55	100	(0%-20%)		12/19/17	01:44
Chromium	50.0		21.2	70.4	ug/L	1.31	98.4	(0%-20%)			
Cobalt	50.0	U	0.300	49.6	ug/L	3.22	99.1	(0%-20%)			
Copper	50.0	B	0.384	50.2	ug/L	4.81	99.6	(0%-20%)			
Lead	50.0	U	0.500	50.6	ug/L	3.66	101	(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1726073										
Manganese	50.0	U	1.00	47.9	ug/L	4.62	95.7	(0%-20%)	BAJ	12/19/17	01:44
Molybdenum	50.0		2.58	54.3	ug/L	1.75	103	(0%-20%)			
Nickel	50.0	U	0.600	49.8	ug/L	3.5	98.8	(0%-20%)			
Selenium	50.0	U	2.00	50.7	ug/L	4.56	99.7	(0%-20%)			
Silver	50.0	U	0.300	50.4	ug/L	1.33	101	(0%-20%)			
Strontium	50.0		211	257	ug/L	0.876	N/A	(0%-20%)			
Thallium	50.0	U	0.600	48.7	ug/L	4.77	97.4	(0%-20%)			
Thorium	50.0	U	0.700	49.0	ug/L	3.44	97.7	(0%-20%)			
Tin	50.0	U	1.00	51.0	ug/L	1.86	101	(0%-20%)			
Uranium	50.0		1.65	51.8	ug/L	2.67	100	(0%-20%)			
Zinc	50.0	U	3.30	50.0	ug/L	0.612	93.4	(0%-20%)		12/19/17	13:55
QC1203938147	439922001	SDILT									
Aluminum		U	3.51	DU	96.5	ug/L	N/A	(0%-20%)		12/19/17	01:50
Antimony		U	0.200	DU	5.00	ug/L	N/A	(0%-20%)			
Arsenic		B	2.71	DU	10.0	ug/L	N/A	(0%-20%)			
Barium			27.8	D	5.63	ug/L	1.42	(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1726073										
Beryllium	U	-0.002	DU	1.00	ug/L	N/A		(0%-20%)	BAJ	12/19/17	13:57
Cadmium	U	0.010	DU	1.50	ug/L	N/A		(0%-20%)		12/19/17	01:50
Chromium		21.2	BD	4.20	ug/L	.845		(0%-20%)			
Cobalt	U	0.030	DU	1.50	ug/L	N/A		(0%-20%)			
Copper	B	0.384	DU	1.50	ug/L	N/A		(0%-20%)			
Lead	U	0.095	DU	2.50	ug/L	N/A		(0%-20%)			
Manganese	U	0.100	DU	5.00	ug/L	N/A		(0%-20%)			
Molybdenum		2.58	D	0.527	ug/L	2.29		(0%-20%)			
Nickel	U	0.400	DU	3.00	ug/L	N/A		(0%-20%)			
Selenium	U	0.881	DU	10.0	ug/L	N/A		(0%-20%)			
Silver	U	0.004	DU	1.50	ug/L	N/A		(0%-20%)			
Strontium		211	D	39.4	ug/L	6.81		(0%-20%)			
Thallium	U	0.030	DU	3.00	ug/L	N/A		(0%-20%)			
Thorium	U	0.146	DU	3.50	ug/L	N/A		(0%-20%)			
Tin	U	0.211	DU	5.00	ug/L	N/A		(0%-20%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1726073										
Uranium			1.65 D	0.332	ug/L	.912		(0%-20%)	BAJ	12/19/17	01:50
Zinc		U	3.27 DU	16.5	ug/L	N/A		(0%-20%)		12/19/17	13:57
<b>Metals Analysis-ICP</b>											
Batch	1726063										
Boron	QC1203938124 LCS	500		470	ug/L		94.1	(80%-120%)	HSC	12/15/17	16:27
Calcium		5000		4690	ug/L		93.8	(80%-120%)			
Iron		5000		4820	ug/L		96.4	(80%-120%)			
Magnesium		5000		4870	ug/L		97.5	(80%-120%)			
Potassium		5000		4600	ug/L		92	(80%-120%)			
Sodium		5000		4880	ug/L		97.6	(80%-120%)			
Vanadium		500		462	ug/L		92.5	(80%-120%)			
Boron	QC1203938123 MB		U	15.0	ug/L					12/15/17	16:24
Calcium			U	50.0	ug/L						
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Potassium			U	50.0	ug/L						

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis-ICP</b>											
Batch	1726063										
Sodium			U	100	ug/L				HSC	12/15/17	16:24
Vanadium			U	1.00	ug/L						
Boron	QC1203938125 439922004 MS	500	U	15.0	501	ug/L	98.5	(75%-125%)		12/15/17	16:34
Calcium		5000		31700	36300	ug/L	N/A	(75%-125%)			
Iron		5000	U	30.0	4790	ug/L	95.5	(75%-125%)			
Magnesium		5000		12000	16700	ug/L	95.3	(75%-125%)			
Potassium		5000		4790	9450	ug/L	93.3	(75%-125%)			
Sodium		5000		11200	16100	ug/L	97.5	(75%-125%)			
Vanadium		500		30.5	507	ug/L	95.4	(75%-125%)			
Boron	QC1203938126 439922004 MSD	500	U	15.0	497	ug/L	0.932	97.6 (0%-20%)		12/15/17	16:37
Calcium		5000		31700	36200	ug/L	0.246	N/A (0%-20%)			
Iron		5000	U	30.0	4700	ug/L	1.79	93.8 (0%-20%)			
Magnesium		5000		12000	16500	ug/L	1.21	91.3 (0%-20%)			
Potassium		5000		4790	9350	ug/L	1.1	91.2 (0%-20%)			
Sodium		5000		11200	15400	ug/L	4.27	84.1 (0%-20%)			

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis-ICP</b>											
Batch	1726063										
Vanadium	500	30.5		503	ug/L	0.772	94.6	(0%-20%)	HSC	12/15/17	16:37
Boron	U	8.84	DU	75.0	ug/L	N/A		(0%-20%)		12/15/17	16:55
Calcium	31700	D		6510	ug/L	2.82		(0%-20%)			
Iron	U	10.3	DU	150	ug/L	N/A		(0%-20%)			
Magnesium	12000	D		2520	ug/L	5.13		(0%-20%)			
Potassium	4790	D		985	ug/L	2.87		(0%-20%)			
Sodium	11200	D		2310	ug/L	3.05		(0%-20%)			
Vanadium	30.5	D		5.61	ug/L	8		(0%-20%)			
<b>Metals Analysis-Mercury</b>											
Batch	1726632										
Mercury	U	0.067	U	0.067	ug/L	N/A			MTM1	12/18/17	11:45
Mercury	LCS	2.00		2.27	ug/L		114	(80%-120%)		12/18/17	11:23
Mercury	MB										
Mercury	U	0.067									
Mercury	MS	2.00	U	2.31	ug/L		116	(75%-125%)		12/18/17	11:46

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis-Mercury</b>											
Batch	1726632										
Mercury	QC1203939577	439941001	SDILT	U	-0.018 DU	0.335	ug/L	N/A	(0%-10%)	MTM1	12/18/17 11:48

**Notes:**

The Qualifiers in this report are defined as follows:

- \* Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

<sup>^</sup> The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# General Chem Analysis

# Case Narrative

**General Chemistry  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL439941  
Work Order #: 439941**

**Product:** Cyanide, Total

**Analytical Method:** 9012\_CYANIDE

**Analytical Procedure:** GL-GC-E-095 REV# 21

**Analytical Batches:** 1726228 and 1726227

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941002	B3FKB8
439941003	B3FJW6
439941004	B3FJX1
1203938583	Method Blank (MB)
1203938584	Laboratory Control Sample (LCS)
1203938585	439941002(B3FKB8) Sample Duplicate (DUP)
1203938588	439941002(B3FKB8) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product: Sulfide, Total****Analytical Method:** 4500D\_SULFIDE**Analytical Procedure:** GL-GC-E-052 REV# 10**Analytical Batches:** 1726354 and 1726915

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941002	B3FKB8
439941003	B3FJW6
439941004	B3FJX1
1203938914	Method Blank (MB)
1203938915	Laboratory Control Sample (LCS)
1203938916	439941003(B3FJW6) Sample Duplicate (DUP)
1203938918	439941003(B3FJW6) Post Spike (PS)
1203940226	Method Blank (MB)
1203940227	Laboratory Control Sample (LCS)
1203940228	439941002(B3FKB8) Sample Duplicate (DUP)
1203940229	439941002(B3FKB8) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product: Alkalinity****Analytical Method:** 2320\_ALKALINITY**Analytical Procedure:** GL-GC-E-033 REV# 13**Analytical Batch:** 1725945

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
439941002	B3FKB8
439941003	B3FJW6
439941004	B3FJX1
1203937839	Laboratory Control Sample (LCS)
1203937841	439941004(B3FJX1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company  
Client SDG: GEL439941 GEL Work Order: 439941

**The Qualifiers in this report are defined as follows:**

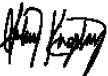
B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Aubrey Kingsbury

Date: 21 DEC 2017

Title: Analyst I

# Sample Data Summary

**GEL LABORATORIES LLC**

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**Certificate of Analysis**

Report Date: December 21, 2017

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF W18-012

Client Sample ID:	B3FKB8	Project:	CPRC0W18012
Sample ID:	439941002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	11-DEC-17 12:05		
Receive Date:	13-DEC-17		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method						
<b>Flow Injection Analysis</b>																		
<b>9012_CYANIDE (TOTAL): COMMON "As Received"</b>																		
Cyanide, Total	B	2.76		1.67	ug/L	1.00	1	AXH3	12/14/17	0749	1726228	1						
<b>Spectrometric Analysis</b>																		
<b>4500_Sulfide: COMMON "As Received"</b>																		
Total Sulfide	U	33.0		33.0	ug/L		1	VH1	12/18/17	1002	1726915	2						
<b>Titration and Ion Analysis</b>																		
<b>2320_ALKALINITY: COMMON (Alkalinity only) "As Received"</b>																		
Alkalinity, Total as CaCO3		103000	1450	4000	ug/L			RXB5	12/19/17	1658	1725945	3						
<b>The following Prep Methods were performed:</b>																		
Method	Description			Analyst	Date	Time	Prep Batch											
SW846 9010C Distillation	SW846 9010C Prep			AXH3	12/14/17	0658	1726227											
<b>The following Analytical Methods were performed:</b>																		
Method	Description					Analyst Comments												
1	9012_CYANIDE																	
2	4500D_SULFIDE																	
3	2320_ALKALINITY																	

**Notes:**Column headers are defined as follows:

DF: Dilution Factor

Lc/LC: Critical Level

DL: Detection Limit

PF: Prep Factor

MDA: Minimum Detectable Activity

RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Report Date: December 21, 2017

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF W18-012

Client Sample ID:	B3FJW6	Project:	CPRC0W18012
Sample ID:	439941003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	11-DEC-17 09:36		
Receive Date:	13-DEC-17		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method					
<b>Flow Injection Analysis</b>																	
9012_CYANIDE (TOTAL): COMMON "As Received"																	
Cyanide, Total	B	2.62		1.67	ug/L	1.00	1	AXH3	12/14/17	0804	1726228	1					
<b>Spectrometric Analysis</b>																	
4500_Sulfide: COMMON "As Received"																	
Total Sulfide	U	33.0		33.0	ug/L		1	VH1	12/15/17	1108	1726354	2					
<b>Titration and Ion Analysis</b>																	
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"																	
Alkalinity, Total as CaCO3		90800	1450	4000	ug/L			RXB5	12/19/17	1700	1725945	3					
<b>The following Prep Methods were performed:</b>																	
Method	Description			Analyst	Date	Time	Prep	Batch									
SW846 9010C Distillation	SW846 9010C Prep			AXH3	12/14/17	0658		1726227									
<b>The following Analytical Methods were performed:</b>																	
Method	Description					Analyst Comments											
1	9012_CYANIDE																
2	4500D_SULFIDE																
3	2320_ALKALINITY																

**Notes:**Column headers are defined as follows:

DF: Dilution Factor

Lc/LC: Critical Level

DL: Detection Limit

PF: Prep Factor

MDA: Minimum Detectable Activity

RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Report Date: December 21, 2017

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF W18-012

Client Sample ID:	B3FJX1	Project:	CPRC0W18012
Sample ID:	439941004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	11-DEC-17 08:48		
Receive Date:	13-DEC-17		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method						
<b>Flow Injection Analysis</b>																		
9012_CYANIDE (TOTAL): COMMON "As Received"																		
Cyanide, Total	B	4.88		1.67	5.00	ug/L	1.00	1	AXH3	12/14/17	0805	1726228						
<b>Spectrometric Analysis</b>																		
4500_Sulfide: COMMON "As Received"																		
Total Sulfide	U	33.0		33.0	500	ug/L		1	VH1	12/15/17	1109	1726354						
<b>Titration and Ion Analysis</b>																		
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"																		
Alkalinity, Total as CaCO3		93800		1450	4000	ug/L			RXB5	12/19/17	1705	1725945						
The following Prep Methods were performed:																		
Method	Description			Analyst	Date	Time	Prep Batch											
SW846 9010C Distillation	SW846 9010C Prep			AXH3	12/14/17	0658	1726227											
The following Analytical Methods were performed:																		
Method	Description					Analyst Comments												
1	9012_CYANIDE																	
2	4500D_SULFIDE																	
3	2320_ALKALINITY																	

**Notes:**Column headers are defined as follows:

DF: Dilution Factor

Lc/LC: Critical Level

DL: Detection Limit

PF: Prep Factor

MDA: Minimum Detectable Activity

RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

# Quality Control Summary

**GEL LABORATORIES LLC**  
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Report Date: December 21, 2017

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**CH2MHill Plateau Remediation Company**  
**MSIN R3-50 CHPRC**  
**PO Box 1600**  
**Richland, Washington**

Contact: Mr. Scot Fitzgerald

Workorder: 439941

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Flow Injection Analysis</b>											
Batch	1726228										
QC1203938585	439941002 DUP										
Cyanide, Total		B	2.76	B	ug/L	10.6	^	(+/-5.00)	AXH3	12/14/17	07:50
QC1203938584	LCS										
Cyanide, Total			50.0		ug/L	49.1	98.2	(80%-120%)		12/14/17	07:48
QC1203938583	MB										
Cyanide, Total				U	ug/L	1.67					12/14/17 07:47
QC1203938588	439941002 MS										
Cyanide, Total		100	B	2.76	ug/L	109	106	(75%-125%)		12/14/17	07:51
<b>Spectrometric Analysis</b>											
Batch	1726354										
QC1203938916	439941003 DUP										
Total Sulfide		U	33.0	U	ug/L	33.0	N/A		VH1	12/15/17	11:08
QC1203938915	LCS										
Total Sulfide			400		ug/L	395	98.7	(80%-120%)		12/15/17	11:08
QC1203938914	MB										
Total Sulfide				U	ug/L	33.0					12/15/17 11:08
QC1203938918	439941003 PS										
Total Sulfide		0.400	U	0.00175 B	mg/L	0.393	97.7	(75%-125%)		12/15/17	11:09
Batch	1726915										
QC1203940228	439941002 DUP										
Total Sulfide		U	33.0	U	ug/L	33.0	N/A		VH1	12/18/17	10:02

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Spectrometric Analysis</b>											
Batch	1726915										
QC1203940227	LCS										
Total Sulfide		400		B	392	ug/L	97.9	(80%-120%)	VH1	12/18/17	10:02
QC1203940226	MB			U	33.0	ug/L					12/18/17 10:02
Total Sulfide											
QC1203940229	439941002 PS	0.400	U	0.0127 B	0.387	mg/L	93.6	(75%-125%)			12/18/17 10:03
<b>Titration and Ion Analysis</b>											
Batch	1725945										
QC1203937841	439941004 DUP										
Alkalinity, Total as CaCO3		93800		92600	ug/L	1.3		(0%-20%)	RXB5	12/19/17	17:07
QC1203937839	LCS										
Alkalinity, Total as CaCO3		100000		108000	ug/L	108	(80%-120%)				12/19/17 16:21

**Notes:**

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is  $\geq$  EQL or is  $>$  5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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**QC Summary**

Workorder: 439941

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
----------	-----	--------	------	----	-------	------	------	-------	-------	------	------

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

<sup>^</sup> The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.